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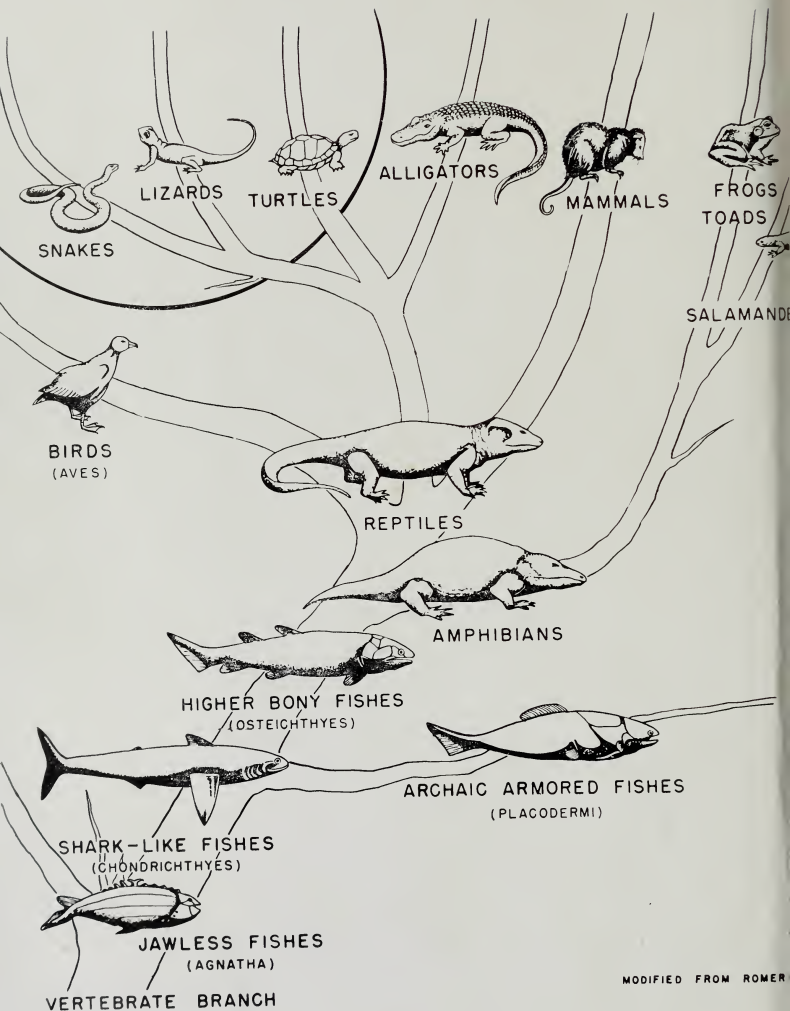
PAUL W. PARMALEE



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INTRODUCTION

The purpose of this work is to provide an illustrated and descriptive account for identifying the reptiles of Illinois. Each species of turtle, lizard and snake found thus far in Illinois is considered separately in relation to its distribution in the state, its description and its natural history in general. Additional information on the natural history of the reptiles as a group is included as an attempt to promote a better understanding of these cold-blooded vertebrates.

Good photographs are essential as an aid in identifying the various species of reptiles. The animals are photographed against a plain background to show clearly their distinguishing or identifying characteristics. Most of the photographs used were taken of living animals, and all of the reptiles known to occur in Illinois are illustrated. Although a few photographs (Alligator Snapping Turtle, Common Mud Turtle, Spotted Turtle, Rat Snake, Mud Snake, Whip Snake, Green Water Snake and Scarlet Snake) show animals that were not collected in Illinois, the race or subspecies differences that may be noticeable do not affect the identification of the species.

The most accepted common name and the scientific name (the genus and species) are included. Although one or more subspecies or geographical races of some of the species described here are found in Illinois, the names are not included in the text, since the species is the largest category of "kind" which satisfies the usual needs of identification. "A Check List of North American Amphibians and Reptiles" by Karl P. Schmidt, 1953, is the source from which the common and scientific names were taken.

Illinois is relatively rich in both numbers and different kinds of reptiles occurring within its borders. During the past 15 or 20 years, several species new to the state have been reported and the range of known species extended. Thus far, there have been 16 species of turtles, six species of lizards and 36 species of snakes recorded from Illinois.

ACKNOWLEDGMENTS

I would like to express my sincere appreciation to Dr. Philip W. Smith, Illinois State Natural History Survey Division, Urbana, for distribution information, aid in obtaining specimens for photographing, for critical comments and for reading the manuscript. I am also indebted to Mr. R. Earl Olson, Rockford, Mr. Floyd Kringer, Dept. of Conservation, Vandalia, and Miss Esther Bennett, Southern Illinois University Museum, Carbondale, for the loan of certain specimens for photographing. I would like to acknowledge the valuable assistance given by my wife, Barbara Parmalee, in critically reading the manuscript and for the preparation of the illustrations. To the authors and their texts (Suggested References, in part) which were used as references for much of the material in this work, I would also like to express my gratitude. Unless otherwise stated, photographs were taken by the museum photographer, Mr. Charles W. Hodge.

NATURAL HISTORY OF THE REPTILES

The numbers and different kinds of reptiles that exist today cannot compare with those that roamed the earth during the Mesozoic Era, approximately 150 million years ago. The well-known dinosaurs constitute only one of the many groups of reptiles present during the "Age of Reptiles." Fossil and other evidence indicate that the reptiles developed from amphibian stock (salamanders). One of the most important evolutionary achievements of the reptiles was that of becoming adapted for terrestrial life apart from water. The reptiles are covered with either bony plates (the shell of turtles), thick leathery skin (alligators and soft-shelled turtles), or scales (lizards and snakes).

This group also shows an advancement over the amphibians in that all reptiles have internal fertilization and the eggs are protected with membranes and a semi-hard shell. The free-living larval stage that was present in the amphibians does not occur in reptiles, since this stage is completed while the animal is still in the egg. All reptiles breathe by means of lungs.

Turtles

Turtles found in Illinois are, with the exception of the Box Turtles, primarily aquatic in habit. All except the Soft-shelled Turtle are enclosed in a bony shell which is composed of a dorsal or top portion called the carapace and a ventral or bottom portion termed the plastron. This bony shell is in turn covered with large flat scales. Turtles have no teeth, but instead the jaws are covered with tough, horny, shell-like ridges.

All female turtles lay eggs which are elongate or spherical in shape, white in color and have a shell that varies in texture from soft and leathery to brittle. In some cases the shell is soft when the egg is first laid but hardens during incubation. The eggs are laid in holes dug by the female in soil, sand, or decaying vegetation. The number of eggs laid by species of Illinois turtles differs greatly, variations from less than 10 to several dozen occurring. In some species of turtles, sperm (male sex cells) may be stored in the reproductive tract of the female and continue to fertilize eggs there for periods of at least four years after mating. However, the percentage of fertile eggs in clutches produced after the first season

decreases progressively. Incubation periods normally range between two and three months (depending upon the specie of turtle, temperature and moisture), and the young usually hatch in mid or late summer. Hatching, or at least actual emergence from the nest, is occasionally delayed until spring.

Over-all size and weight of adults varies considerably, from the Common Mud Turtle which averages three to four inches in length and one-fourth pound in weight to the Alligator Snapper, whose shell length may be over two feet and weight 250 pounds. Turtles are known to live a very long time and in all probability many of the more than 250 known species frequently pass the half-century mark. Like the amphibians and other reptiles, turtles hibernate in regions where the winter months are accompanied by freezing temperatures.

Most Illinois turtles are primarily carnivorous (flesh eaters) in their food habits, utilizing as food insects and insect larvae, fish, crayfish, earthworms, snails, and occasionally carrion. Snapping Turtles (as well as certain other species), which are primarily aquatic, will also feed on vegetation and are known to take ducks and other water and shore birds. Turtles themselves are used by man for food, the Snapper, Soft-shelled Turtle and Diamond-back Terrapin being especially desirable for table use.

Lizards

Only six species of lizards are known to occur in Illinois and, as is true of most lizards, they are terrestrial or land-dwelling in habit. The lizards are closely related to the snakes, and these two groups (Order: Serpentes) represent the highest and most advanced form of cold-blooded vertebrates (with the possible exception of the alligators). The head and neck are usually distinct, the body being elongate with a long tail and completely covered with scales. Typically there are two pairs of legs, but the Glass Snake, which is actually a lizard, is limbless. The body is covered with scales which may be smooth, rough (keeled or spine-tipped) or a combination of both.

Unlike the snakes which are totally deaf, most lizards possess external ear openings and are able to hear sounds. The eyes are generally movable and in most cases covered by movable eye lids.

Most lizards possess numerous teeth which are arranged in a single row along the edges of the jaws. Whereas snakes swallow their prey whole, lizards make some attempt to masticate or chew their food. Although some lizards will bite when handled, they are in no way poisonous. Food consists almost entirely of insects and, because of this economic value to man, should not be destroyed.

All Illinois species of lizards are egg-layers, the eggs being deposited generally in loose soil, sand or decayed logs. In most instances hatching occurs in late summer. Moulting or shedding of the skin takes place at more or less regular intervals during the period of the year when the animal is active. Because of weak tail vertebrae, some lizards are able to break off the tail easily either of their own will, by a blow or in response to pressure caused by being held. Many a predator in pursuit of a lizard has been left with just the wiggling tail while the lizard escaped to safety. New tails are regenerated and, except for the lack of vertebrae and major blood vessels, are similar to the original tail.

Snakes

Few animals attract greater attention and cause more fear and uncertainty than do the snakes. Superstition, misinterpretation of fact and hearsay have unfortunately caused many to dislike and fear these reptiles. On this account, harmless and economically valuable species are constantly being destroyed. Often one hears statements to the fact that certain snakes milk cows; roll their bodies into a hoop or make it serve as a whip; charm their prey; emit poison gas; break up into pieces and then reassemble; possess a stinging tongue or tail; swallow their young for protection and are slimy. These are all misconceptions.

Actually snakes possess a dry, scaly skin that is covered with scales. They are totally deaf (i.e. without organs for hearing) and the eyes are without lids. Nocturnal snakes (active chiefly at night) possess a vertical pupil while diurnal species (active during the day) have a rounded or circular pupil. Although no living snake today possesses functional legs, evidence indicates that they have evolved or developed from a lizard-like ancestor that did possess legs. The snakes are a successful group of reptiles as indicated by the large numbers and different species now living, and by their

ability to adapt themselves to a variety of habitats. Depending upon the particular species, snakes are found living in trees, in water, buried in the ground and, of course, the greatest majority are terrestrial in habit (live on the surface of the ground).

The body of the snake is greatly elongated and contains an extremely well developed muscular system. Although snakes are generally well supplied with teeth (non-poisonous species having one to several rows on the upper and lower jaws), they do not chew their food but swallow it whole. The teeth serve to hold and manipulate the food as it is being swallowed. Poisonous snakes have fewer regular teeth than the non-poisonous species (See Illustrations). The bones of the jaw and skull are rather loosely articulated or connected which allows for considerable expansion and stretching, permitting the snake to swallow objects greater in diameter than itself. Several species such as the Bull Snake and the King Snakes usually kill their prey by constriction, that is, coiling their body around the victim and squeezing until it is killed by suffocation. All snakes are carnivorous, feeding on a multitude of different forms such as frogs, toads, salamanders, turtles, lizards, other snakes, insects, worms, spiders, birds, rabbits, mice, rats and other kinds of rodents.

Four species of poisonous snakes, the Copperhead, the Cottonmouth Moccasin, the Timber Rattlesnake and the Massasauga are to be found in Illinois, although not commonly. Only in areas devoid of intensive agricultural practices such as the river bluffs and marshes can these forms be expected to maintain themselves. These species belong to the Family Crotalidae, which are the New World pit vipers. This family is, in turn, subdivided into two groups, the moccasins and rattlesnakes. All, however, are characterized by the presence of a loreal pit between the nostril and eye, vertical eye pupil (characteristic of many nocturnal animals) and by the presence of a pair of hinged hypodermic-like fangs, located in the front part of the upper jaw. If broken or lost, these fangs are soon replaced.

The loreal pit is an extremely delicate sense organ capable of detecting the body heat of warm-blooded animals at some distance, and thus aid in directing the strike as well as finding the prey after death. The poison glands are located at the rear of the head and

when the snake strikes, muscles surrounding the poison sac contract and force the poison through a connecting duct into the base of the hollow fang. When the mouth is closed the fangs, which are modified teeth, are folded back against the roof of the mouth in special grooves or sheaths. As the snake opens its mouth to bite or strike, the fangs may be rotated downward at will so that they project almost straight forward. Generally, poisonous snakes strike their prey and immediately release it whereas non-poisonous snakes strike and continue to grasp the prey until it is swallowed, usually head first.

The venom (a pale, clear yellow liquid) of Illinois moccasins and rattlesnakes is primarily haemotoxic; that is, it most often tends to break down and destroy the red blood cells, thus preventing the carrying of oxygen to the body tissues and organs. The bite of a poisonous snake is a very serious matter although it is not as dangerous nor as often fatal as many individuals are led to believe.

However immediate medical aid by a doctor is essential, and a quick application of standard first aid procedures greatly reduces the possibility of death or painful recovery. (1) Keep calm to prevent rapid blood circulation which would more quickly spread the poison. (2) Apply a tourniquet between the bite and heart, loosening it for a minute or two every 15 to 20 minutes. (3) Sterilize (if possible) the area around the bite and make several $\frac{1}{4}$ -inch deep cuts through both fang marks. (4) Apply suction, either with a suction cup (such as the type that is included with commercial snake-bite kits) or with the mouth providing there are no open areas of tooth decay or sores on the lips or in the mouth. (5) Get a doctor or to a hospital as soon as possible and injections of anti-venim. If an individual is working or traveling in areas known to be inhabited by poisonous snakes, it is a good policy to carry a snake-bite kit or have one readily available. By drinking whiskey and other stimulants, and/or applying potassium permanganate, kerosene, chewing tobacco, gun powder, raw liver and similar false but supposedly "sure-cures" to the bite, a person greatly reduces his chances of a successful recovery.

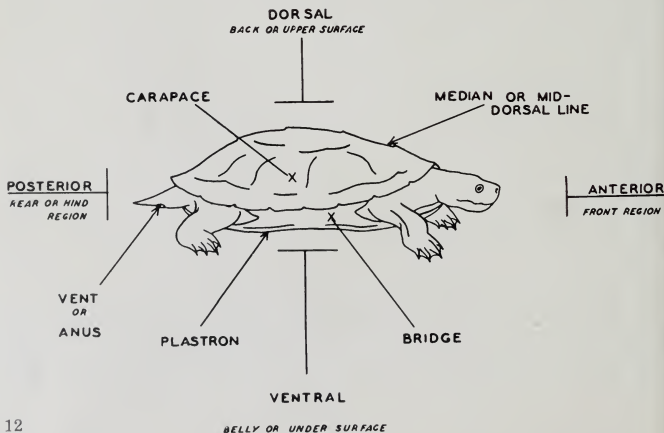
The rattlesnakes are of particular interest since they possess a rattle at the end of the tail which is composed of a number of loosely jointed, horny segments which, when vibrated against each other,

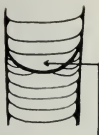
produce a peculiar, characteristic sound. The newly born rattlesnake has only a simple, blunt "button" at the end of the tail, but after the skin is shed (generally two to four times a year) a new segment is usually added. Copperheads and Cottonmouth Moccasins, as well as some non-poisonous snakes such as the racers, will often vibrate the ends of the tail, and the sound produced by the vibrating tail against dry leaves and similar objects may be mistaken for that of a rattlesnake. The harmless Hog-nosed Snake is considered "deadly" by many because of its habit of "hissing" and flattening or spreading the head and neck region.

As a whole, snakes, including the poisonous species, are definitely beneficial to man by destroying large numbers of harmful insects, rodents and other enemies and pests. Unless they become obnoxious or dangerous (in the case of poisonous species) in specific localities such as parks and in and around private dwellings, snakes should not be wantonly destroyed.

DESCRIPTIVE TERMINOLOGY

Certain descriptive terms that have been used in the following accounts of species may be new to some individuals. Without the use of these few terms, however, the problem of clearly and accurately describing the various structures and regions of the different reptiles becomes difficult. With the thought in mind of making these terms and their meaning as clear and understandable as possible, the following labeled diagrams are presented.

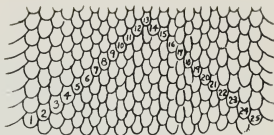




ENTIRE OR SINGLE
ANAL PLATE



DIVIDED ANAL
PLATE



SCALE ROWS SHOWING A
METHOD OF COUNTING SCALES



KEELED [OR ROUGH] SCALES



SMOOTH SCALES



HEAD OF A POISONOUS SNAKE
[PIT VIPER]

NOSTRIL

LOREAL PIT



HEAD OF A NON-POISONOUS OR
HARMLESS SNAKE



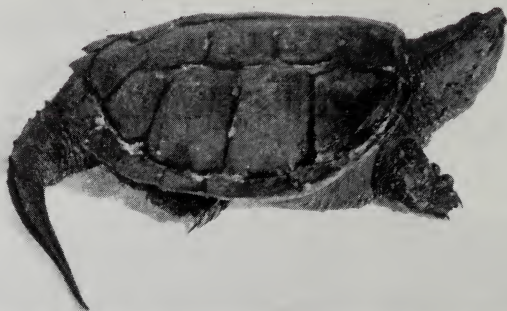
FANGS

SKULL OF A POISONOUS SNAKE



SKULL OF A NON-POISONOUS OR
HARMLESS SNAKE

Common Snapping Turtle (*Chelydra serpentina*)



Distribution.—Statewide.

Description.—Unlike the Alligator Snapper with which the Common Snapper may be confused where they both occur, the three rows of ridges or keels on the carapace are low and/or almost indistinguishable in adults (although somewhat pronounced in young specimens). Also, the eyes of the Common Snapper can be observed from directly above while the eyes of the Alligator Snapper cannot. The plastron is small and cross-shaped, and the large, massive head and limbs cannot be drawn into the shell. The jaws are strongly hooked but not as much as those of the Alligator Snapper. The upper surface of the tail contains three rows of projecting, triangular-shaped bony plates, the center row being the largest, while the under side is covered with relatively large plates that are arranged irregularly in two rows. They are a fairly uniform dull brown above and light below. Maximum weight approximately 85 pounds; most adult specimens, however, will average about 20 pounds. Maximum carapace length between 14 and 15 inches.

Natural History.—The Common Snapper is more widely distributed in North America than probably any other species of turtle, and almost every type of aquatic habitat is utilized. They apparently prefer, however, and are found most often in permanent bodies of water such as rivers, streams and ponds, especially those

that contain muddy bottoms. Both plants and animals are eaten, and of the latter, crayfish, snails, insects, fish, and frogs are most often taken. These turtles are known to take aquatic game birds and fish, but not in numbers serious enough to warrant wholesale destruction of the species.

Mating may occur anytime between April and November. The eggs, averaging 20 in number, are laid in a shallow nest (scooped out by the female) in damp soil and exposed to the sun, usually within 75 feet of the water's edge. The eggs are normally laid in June and approximately 90 days are required for incubation.

Alligator Snapping Turtle (*Macrochelys temminckii*)



Distribution.—Approximately the southern half of the state, in the larger rivers.

Description.—The Alligator Snapper is the largest turtle inhabiting Illinois waters. It may attain a weight of over 200 pounds and possess a carapace measuring more than two feet in length. The head is very large and massive, covered with plates above, and the upper jaw is strongly hooked at the tip. The tail is long and possesses three rows of tubercles on the upper surface and irregularly arranged scales on the lower surface. Characteristic of this species are the three prominent high keels or ridges on the carapace. The carapace and dorsal surfaces of the head, limbs and tail are dark brown in color, while the small cross-shaped plastron and the fleshy under parts are dull gray or whitish.

Natural History.—This species is known to inhabit large permanent rivers, sloughs and canals, preferring the deep, muddy-bottomed sections in which to seek protection and to lie in wait for prey. There is a remarkable structure on the tongue that serves as a lure for prey. It is a cylindrical, pinkish, worm-like growth that can be moved whenever the snapper wishes. The turtle, resting motionless on the bottom with its mouth held open, moves this structure giving it the appearance of a wriggling worm, and thus attracting the fish (its principal food) to the waiting jaws. In Illinois this species can be considered rare and only a very few specimens have been taken. This may be due, in part at least, to its relatively secretive habits.

Little is known of the breeding habits of this species in Illinois. In the southern extremes of the range, the eggs, averaging about 20 in number, are laid during April, May or June and hatching occurs about three and one-half months later. Little is known of their rate of growth; length of life in captive specimens has been recorded as 65 years, although it is thought that they may live to be considerably older than this.

Common Musk Turtle (*Sternotherus odoratus*)



Distribution.—Statewide.

Description.—This species is a plain-looking turtle with few distinguishing marks. The carapace of adults may or may not possess a weak keel along the midline, although young of this species often have three keels. The carapace is hinged anteriorly and posteriorly, allowing considerable movement of the front part

and a somewhat restricted movement of the rear part. As the turtle retracts its legs, tail and head, the hinged portions of the plastron are drawn upward as a partial protection of the soft parts. The skin is rather spiny and there are two small barbels on the chin. The carapace varies from olive to dark brown or black in ground color and is usually unmarked, while the plastron is yellowish or brown. The legs, tail and head are olive to black in color; there are two narrow yellowish or whitish lines (often faint and inconspicuous) along either side of the head and neck. The Common Musk Turtle is a small species, having a carapace length seldom over 4 inches.

Natural History.—The Common Musk Turtle will inhabit almost any permanent body of water, although it prefers the deep, quiet waters of ponds, marshes and rivers with mud bottoms. Vegetation, aquatic insects, snails, worms, crayfish, tadpoles, small fish and carrion comprise most of the food eaten. They are relatively poor swimmers and are primarily bottom dwellers, seldom coming to the surface except for air. The rather unpleasant odor emitted by this turtle comes from four musk glands located on the under side of the shell near the connections (bridge) of the carapace and plastron.

Apparently mating may take place at any time throughout the period of activity (April-October). The eggs, normally 3-5 in number, are laid sometime between May and August, and are deposited in a shallow nest under or near a log, stump or other object not over 200 feet from water. The period of incubation varies between two and three months.

Yellow Mud Turtle (*Kinosternon flavescens*)



Distribution.—West and west-central Illinois.

Description.—This is a relatively large mud turtle, having a maximum carapace length of about five inches. Although the young may possess a weak median keel on the carapace, the adults are without it. Characteristic of the family Kinosternidae, the plastron has two hinges. The ground color of the carapace is an olive green or brown and it is usually unmarked. The plastron is generally a light brown or yellowish. The soft parts (exposed parts of the body other than the shell) vary from dark olive to blackish in color, usually darker above and fading to light below. The two chin barbels and the anterior half of the lower jaw are a dusky yellow-gray, although these yellow markings are often faded and indistinct. This turtle also possesses musk glands and can emit quite an odor.

Natural History.—Although relatively common in areas where it occurs, the Yellow Mud Turtle is restricted to the sand areas along the Illinois River and a small region along the Mississippi River. It inhabits primarily small ponds and sloughs that have mud bottoms. The Yellow Mud Turtle, like the Musk Turtle, is a poor swimmer and mainly a bottom dweller. Unlike the Musk Turtle, however, it will sun itself occasionally on objects in or at the edge of the water. Although it utilizes a variety of organisms for food, feeding both on land as well as in the water, insects and aquatic snails are preferred.

Very little information is available on the time of mating, eggs, nests and incubation. Mating may possibly take place in the fall (captive specimens observed mating in October), and normally only two eggs are laid by each female.

Common Mud Turtle (*Kinosternon subrubrum*)



Distribution.—Probably the southern one fourth of the state.

Description.—This is another small species of turtle, the carapace of adults averaging about three inches in length. The plastron is again two-hinged, and is usually brownish or yellowish in color. The carapace is nearly straight-sided and flattened on top; it is unmarked in adults (carapace of young with three weak keels and light spots along the edge) and the ground color varies from yellowish or olive to almost black. The soft parts are dark brownish or olive above and yellowish beneath and the head is often marked with yellow mottlings.

Natural History.—This is a rare turtle in Illinois and locality records are few. Apparently fairly shallow, muddy ditches, ponds and weedy lakes are the preferred habitats. It is not so completely aquatic as the Musk Turtle, and often wanders about on land a considerable distance from water. Little information is available on the food habits of this species, although they have been known to feed on small fish and a variety of insects.

Breeding is known to occur in early spring and egg-laying takes place from the last of March through July. Two to five eggs may be laid by a single female although three is the usual number. The eggs are deposited in holes on the banks of ponds or in moist soil along the open edges of the water. This species is not too particular as to the exact site of the nest or in concealing it after the eggs have been deposited.

None of the Musk and Mud Turtles appear to be of any economic importance since they cannot be classified as either beneficial or harmful on the basis of their food habits, and they are certainly not a desirable food for man.

Spotted Turtle (*Clemmys guttata*)



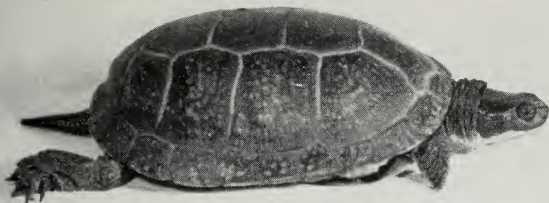
Distribution.—Northeastern Illinois.

Description.—In respect to pattern, this species is perhaps the most unique of all American turtles. The ground color of the carapace is a uniform black and each scute (scales covering the bony carapace) bears from one to many rounded, bright orange-yellow spots. The plastron is large, not hinged, and is yellow and black in color. The dorsal surface of the head, limbs and tail is black, usually marked with spots. There are one or two prominent spots or broken bands of yellow on the side of the head. The Spotted Turtle is a relatively small species, the adults having an average carapace length of about four inches. The carapace is usually broad, oval, and smooth except for young turtles which may possess a median keel.

Natural History.—Apparently Wisconsin and Illinois represent the westernmost extension of this turtle's range, and it is extremely rare in this state and only a very few specimens have been taken. Marshes, ponds and small streams appear to be the preferred habitat, especially those with mud bottoms. The Spotted Turtle is an aquatic species although it will, on occasion, wander considerable distances on land for no apparent reason. Worms, snails, insects, crayfish, frogs and tadpoles are the main food items, although some vegetation is eaten. Like most aquatic turtles, the food is eaten and swallowed only under water.

The eggs, which average three in number, are laid by the female sometime between the middle of June and the first of July, and they are deposited in nests dug in fine sand or soil. Incubation lasts about 2½ months.

Blanding's Turtle (*Emys blandingi*)



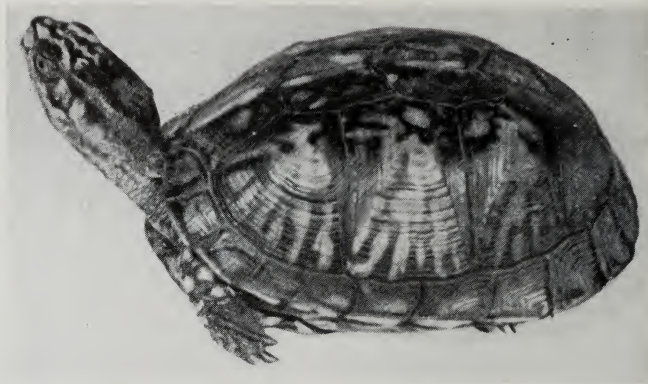
Distribution.—Approximately the northern one half of Illinois.

Description.—This is a moderately large turtle having a maximum carapace length of about 9 inches. The oblong, somewhat flattened carapace has a ground color of black that is densely mottled with small flecks, spots, short streaks or bars of light color. The plastron is large and yellow in color, each scute having a large black blotch on the outer part. Because of its large size and hinge, the plastron is effective in enclosing the soft parts within the shell. Very characteristic of this species is the uniform bright yellow of the chin and throat which meets the dark brown color of the upper surfaces in a distinct line. The latter color is often speckled or mottled with yellow.

Natural History.—Blanding's Turtle is now uncommon in most areas where it occurs in Illinois, although early records indicate that it apparently was quite common prior to 1900. It is considered to be a semi-aquatic species; in some regions it appears to be primarily terrestrial while in others it is mainly aquatic, inhabiting quiet ponds, weedy lakes and small streams. While on land it utilizes a variety of berries, grasses, leaves and other vegetation as well as earthworms, grubs, insects, and insect larvae for food. In its aquatic habitat, crayfish, tadpoles, frogs, aquatic insects and small fish are eaten.

Mating may take place at any time from March to October. The eggs, which average 6 to 10 in number, are laid in June or July and are deposited in a nest scooped out by the female. The length of incubation is not known. Records of young hatching in the fall are available, although it is possible that the eggs do not hatch until the spring following their deposition.

Common Box Turtle (*Terrapene carolina*)



Distribution.—The southern one half of the state.

Description.—Considerable variation in the size and shape of individuals of this species exist, but generally the shell is oval and the carapace is high, box-shaped and slightly keeled. Extreme variations in the color and color patterns are also evident. The carapace may vary from a uniform olive without markings to one that is brown and yellowish and marked with irregularly radiating bars, spots or lines on each scute. The plastron, which is hinged and can completely enclose the soft parts, also varies from an unmarked yellowish or brown of varying shades to one with irregular dark blotches or streaks. The soft parts are usually spotted, streaked or mottled with yellow (females) or orange (males). The bright red eyes of the male distinguishes him from the female. The tip of the upper jaw is hooked. Maximum carapace length about 6 inches.

Natural History.—The Common Box Turtle is a terrestrial species and is seldom found in water except during especially hot and dry periods. At such times it can often be collected in considerable numbers along shallow creeks and ponds. The preferred habitat is woodland that contains plenty of underbrush and herbaceous ground cover such as weeds and grass. A large portion of their diet consists of plant material of all kinds although small animals, especially insects, are also consumed. This is a common turtle

in Illinois, and because of their very gentle disposition and easily satisfied appetite, they are often kept as pets.

Mating commences in early spring after the turtles leave their places of hibernation. The eggs are laid in June and July and the average clutch will contain four. These are deposited in shallow nests scooped out by the female in loose moist soil, usually in relatively open spots. The incubation period varies from 2 to 3½ months in length.

Ornate Box Turtle (*Terrapene ornata*)



Distribution.—Statewide except for extreme southern Illinois.

Description.—The general structure of the shell of this species is similar to that of the Common Box Turtle and the over-all size of the two species is approximately the same. However, the carapace of the Ornate Box Turtle is somewhat more flattened on top than that of the Common Box Turtle and there is no median keel in the adults. The ground color of the carapace is a dark to reddish brown, and it is marked with a bright pattern of narrow, yellow lines radiating from the upper hind corner of each scute. Like the Carolina Box Turtle, this species has a large plastron, hinged in the center, that can completely enclose the soft parts. It has a characteristic and usually constant color pattern of light lines that radiate in all directions on a dark background. The head and neck are marked with irregular light areas while the legs are patterned with rounded light yellowish spots.

Natural History.—The Ornate Box Turtle is considered a prairie species through much of its range, although it can and does inhabit a variety of situations. Apparently it prefers the relatively open, dry sandy areas although it occurs not uncommonly in wooded regions. Some vegetation is eaten but animal matter, especially insects, constitutes the bulk of the diet. This turtle appears to be common in Illinois only locally, but in such areas they are often numerous and can be picked up in open pastures and fields.

Actual mating may occur during a period from May to October. The eggs, which average about four, are laid usually during June and July. Little information is available in regard to the nest or time of incubation. Apparently the eggs hatch in the fall and the young turtles begin to hibernate soon after hatching.

Common Map Turtle (*Graptemys geographica*)



Distribution.—Statewide.

Description.—This species is a moderately large aquatic turtle (maximum carapace length of males, $5\frac{1}{2}$ inches; females, 11 inches), having a relatively low, flattened carapace that has an uneven, low central keel. As a modification for swimming, the hind feet are enlarged and broadly webbed. The head is large and often appears swollen. The ground color of the carapace is a dull olive-brown and it is usually marked with narrow, yellowish lines, circles, or blotches that may be either pronounced or indistinct. The plastron is yellow to whitish in color and usually unmarked. The ground color of the head and legs varies from brownish-green to

olive; the latter are marked with light-colored streaks while the head and neck are patterned with numerous longitudinal light yellow lines. There is usually an elongate yellowish spot behind each eye.

Natural History.—Large rivers, lakes and marshes that are of a permanent nature constitute the main habitat types for this species. Such bodies of water having mud bottoms and vegetation are especially preferred. In Illinois the Map Turtle is confined primarily to the large rivers, but even in such habitats it is not common. The Map Turtle feeds almost exclusively on aquatic insects, snails, mussels (fresh water clams) and crayfish. The powerful jaws are provided with broad crushing surfaces which enable the turtle to utilize such hard-shelled foods.

Mating takes place in early spring and the eggs, 10 to 16 being the usual clutch, are laid in May, June or July. Those eggs laid early in the spring hatch during August and September, while those deposited in late spring or early summer may remain in the nest throughout the winter and then hatch the following spring. The nests are dug in soft, loose soil or sand, and may be a quarter of a mile from the nearest body of water.

Like many aquatic turtles, the Map Turtle enjoys sunning itself on logs and other objects in the water. Although it is an edible species, apparently it is little used by man for food.

False Map Turtle (*Graptemys pseudogeographica*)



Distribution.—Approximately the southern three fourths of the state.

Description.—Like the Map Turtle, adult males and females of this species show marked differences in size (maximum carapace length about 9 inches). The general structure and appearance is similar to the Map Turtle, except for coloration and the considerably more pronounced median keel of the carapace. Also, the rear margin of the carapace of the False Map Turtle is strongly notched in comparison with the moderately notched carapace of the Map Turtle. The carapace is olive to brownish, marked with various patterns such as dark-brown blotches bordered with greenish-yellow circular markings. The plastron is yellow and may or may not be patterned with dark areas. The head and legs are greenish black in color and lined with greenish-yellow stripes. Very characteristic of this species is the large yellowish spot behind each eye that gradually tapers to a line that runs posteriorly on the head.

Natural History.—The False Map Turtle is an aquatic species and inhabits streams and rivers with considerable current, and like the Map Turtle is uncommon in most areas. It is a shy turtle and although it spends many hours on a stranded log or protruding deadhead basking in the hot sun, it remains wary and on the alert, sliding into the water at the slightest disturbance. The food habits of this species closely parallel those of the Map Turtle, except that the False Map Turtle is somewhat more omnivorous, feeding to a greater extent (as adults) on vegetation.

Relatively little information is available concerning egg-laying, nesting and the incubation period of this turtle. Apparently egg-laying does not commence before July. The number of eggs laid by a female varies from 7 to 13, although 9 or 10 constitutes the usual number. Newly hatched young have been taken in August and September.

Painted Turtle (*Chrysemys picta*)



Distribution.—Statewide.

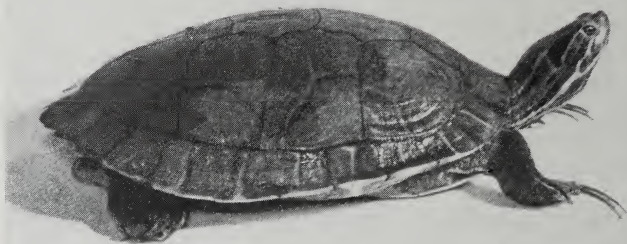
Description.—This species is of moderate size, the carapace of the adults averaging about five inches in length. The carapace is oval and somewhat flattened, and there is a complete absence of a keel in both adults and young. The ground color varies from olive to dark brown, and normally there is a narrow middorsal light line. The small scutes forming the outer margin of the carapace possess red bands or bars as well as several yellowish lines or streaks. Most of the larger scutes are also patterned with a single irregular yellowish streak. The plastron is yellow in color with the middle portion dark; this dark center pattern is reduced in the Painted Turtle of eastern and central Illinois, but it is quite extensive in the western forms, filling most of the plastral surface. The legs are dark olive and streaked with yellow. The head is dark olive or brown and is marked with a series of light lines that run longitudinally; the widest of these are found on the chin and on the side of the head behind the angle of jaws.

Natural History.—A variety of relatively shallow streams and rivers, ponds, lakes and marshes provide the best habitat. This is a common turtle in Illinois and is found in a wide variety of situations, although it prefers bodies of water with mud bottoms and aquatic vegetation. Plant and animal material are eaten in about equal amounts, the latter consisting of insects, snails, worms, and small fish. Although this species hibernates under water, it is

apparently quite resistant to cold and is occasionally active during the winter months. The Painted Turtles are especially fond of sunning themselves and may spend several hours a day on floating or partly submerged objects.

Mating takes place in spring and fall, and the eggs (average clutch numbers 5 or 6) are laid from May to July. The nests may be dug in areas such as the open shore lines or in bushy or wooded areas a considerable distance from water. Incubation lasts for approximately $2\frac{1}{2}$ months; if hatching occurs late in the season, the young may remain in the nest until the following spring.

Southern Terrapin (*Pseudemys floridana*)



Distribution.—Extreme southern Illinois.

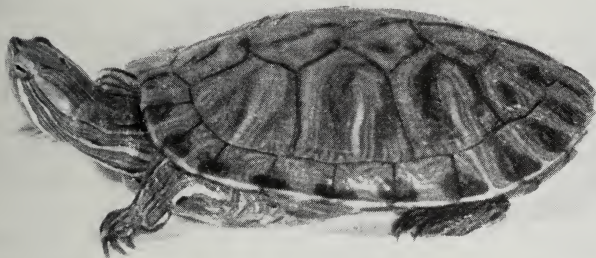
Description.—The carapace of this turtle (the subspecies *P. f. hieroglyphica*, the Hieroglyphic Turtle, is the one found in Illinois) is oblong, low and rather depressed, and usually without a median keel except in young specimens. It is olive to dark brown in color with a rather distinct, narrow-lined network of rings or circles. The limbs especially the hind legs, are broadened toward the tip and are well adapted for swimming. The head and legs are brown in color and patterned with yellowish stripes. The plastron is large and unhinged, yellow in color and usually marked with a central dark pattern. Young Hieroglyphic Turtles are often more greenish in color and the markings are more vivid. This is a moderately large turtle, having a maximum carapace length of about 15 inches.

Natural History.—Permanent bodies of water such as large, rather shallow ponds, sloughs and slow-moving rivers provide the best habitat for this species. Bodies of water possessing a mud

bottom and plenty of aquatic vegetation are especially preferred. This turtle is extremely rare in Illinois, and little is known of its life history in the state. The Hieroglyphic Turtle feeds almost entirely on animal matter, especially insects, crayfish, tadpoles, small fish and carrion.

Almost no information is available on the breeding and nesting habits of this turtle. Quite possibly the mating and nesting habits are similar to the Sliders or Painted Turtles. The few available records indicate that nesting occurs in June, and that the number of eggs laid will average 10 to 12.

Pond Terrapin (*Pseudemys scripta*)



Distribution.—Statewide except for the northernmost section of Illinois.

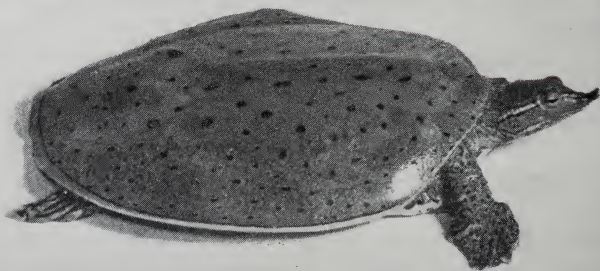
Description.—The Pond Terrapin, commonly referred to as Slider or “Cooter,” as it is sometimes called, is a moderately large aquatic turtle that will reach a maximum (carapace) length of about 10 inches. There is a median keel on the carapace of young Sliders, but it is absent in adults. This species shows some unusual differences in respect to color and pattern of the somewhat flattened carapace. Normally adult females and young males are marked with several thin light yellow stripes or lines on the large carapace scutes and on the scutes forming the margin of the shell. Although some adult males may show these characters, most are dark in color and without such a pattern. The plastron is yellow, each scute normally being marked with a central black smudge or blotch. The head and legs are olive or brown in color and striped

with yellow. The most distinguishing characteristic of this turtle is the "red ears"—a large broad reddish-orange band on each side of the head and neck.

Natural History.—Permanent marshes, ponds, lakes, and slow moving streams and rivers are inhabited by Sliders, those with mud bottoms being especially preferred. This is a common turtle in Illinois waters and during the warm summer days they can often be observed sunning themselves in company with other turtles, especially the Painted Turtle. Various species of small animals, particularly insects, snails, crayfish, tadpoles and small fish are utilized for food. Although carrion is also eaten, little plant material is consumed.

Like the Painted Turtle, mating apparently takes place in the spring and fall. The average number of eggs laid is 10, and these are deposited during May or June. The nests are dug in rather loose sand or soil, and the nest site may be several hundred yards from the water. As in the case of most turtles, the nest is excavated by the use of the hind legs and the soil is dampened from time to time with fluid from the bladder. This habit of moistening the soil during the nest-digging process is characteristic of several species of turtles; apparently it aids in making the soil more workable.

Soft-shelled Turtle (*Trionyx ferox*)



Distribution.—Statewide.

Description.—As the common name indicates, the shell is soft and leathery and without bony plates. The carapace is oval in shape and the anterior margin is roughened with tubercles or spines.

Often the whole surface of the carapace is roughened by small sharp nodules. The neck is very long; the head is elongate and the nostrils are at the tip of the tube-shaped nose. The legs and tail are thick, and the toes are completely webbed. The ground color of the carapace is olive to grayish, and contains (in the young turtles) numerous, dark-edged spots. The under parts are whitish in color. There is a single dark line that follows the margin of the carapace, bordering a wider light outer band. The shell pattern often becomes indistinct or disappears in adults. There is a light line through the eye. Maximum length of the carapace about 16 inches.

Natural History.—This turtle prefers the larger slow-moving, mud-bottomed rivers, although back-water sloughs and permanent lakes and ponds are also inhabited. Because of the broadly oval, flattened body and broadly webbed feet, the Soft-shell is an extremely fast swimmer. Except for brief periods of sunning, they seldom leave the water and are known to remain submerged for a long period of time. The Soft-shell is a relatively shy turtle, remaining alert and extremely wary, but if caught it certainly equals the Common Snapper in ferocity. Crayfish constitute the principal food eaten, although insects, worms, small fish, snails, frogs and tadpoles are also taken.

The eggs, varying in number from 10 to 25, are laid in a shallow nest that is usually constructed within 25 feet of the water's edge. Egg-laying occurs during June and July and incubation takes about two months.

Spineless Soft-shelled Turtle (*Trionyx muticus*)



Distribution.—Statewide except for the northeastern section of Illinois.

Description.—The general shape and structure of this species is similar to that of the Spiny Soft-shelled Turtle. Absent, however, are the spines or tubercles on the anterior edge and surface of the carapace. The Spineless or Smooth Soft-shell is the smaller of the two species, the shell of adults averaging about 7 inches in length. In young specimens, the carapace is usually marked with small dark flecks or dashes. The carapace of the adults varies in color from a light to dark brown or olive and is unmarked except for a light band around the margin on some specimens. There is a light, dark-edged stripe extending from the eye onto the neck. Other than the yellowish throat, the underparts are whitish in color.

Natural History.—This species is normally found in streams and rivers with clean, sandy bottoms. In Illinois it is quite common in the sandy areas but absent from the prairie counties where its preferred habitat of sandy river bottoms is absent. It is also an excellent swimmer and is one of the fastest turtles, either in or out of the water. Food utilized by the Smooth Soft-shell consists primarily of crayfish, frogs, tadpoles, fish, worms and insects.

Eighteen to twenty eggs constitute the average clutch, and these are laid sometime during June or the early part of July. Areas of moist sand, usually within 60 feet of the water, are selected for nest sites. The incubation period is about 70 days.

Fence Lizard (*Sceloporus undulatus*)



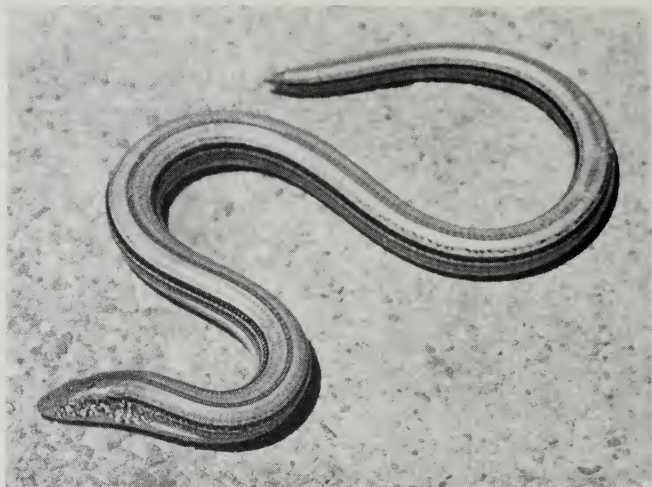
Distribution.—Approximately the southern one half of the state.

Description.—The Fence Lizard, or Rough-scaled Lizard as it is sometimes called, is a fairly small species, the adults averaging about five inches in length. They have a relatively wide head and broad snout, a flattened body, and a long and slender tail. The dorsal scales are rough, overlapping, and each has a backward projecting spine. Color varies considerably, depending upon the age and sex of the lizard and the environment, but normally the ground color is a gray-brown. There are six to 10 irregular, wavy or V-shaped bands across on the back; the males possess patches of bright blue bordered with black on the chin and belly, while the females and young lizards are light beneath with no distinct large markings.

Natural History.—This abundant lizard is found most commonly in semi-open wooded tracts, brushy areas and along woods' edges where they spend much of their active time during the day on a fence post, fallen tree, brush pile or similar object, either basking in the sun or searching for food. Small or medium-sized insects constitute the principal foods eaten.

Hibernation usually begins in late October and lasts until late March or April, depending upon the severity of the winter. The breeding season begins soon after the lizards emerge from hibernation, and it normally lasts for several weeks. The eggs, which vary from four to 17 in number, are deposited two or three inches below the surface of slightly damp soil. The eggs hatch in about 10 weeks.

Slender Glass Snake (*Ophisaurus attenuatus*)



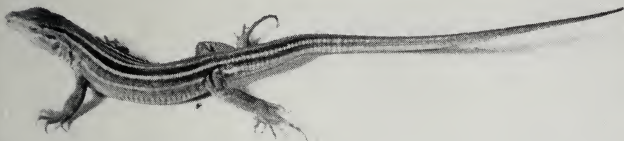
Distribution.—Statewide.

Description.—The Glass “Snake” is perhaps one of the most unusual of all the lizards in that it is completely without legs and has an extremely long tail that constitutes almost two thirds of the total length of the animal. Adults will average about 24 inches in length. This lizard is very snake-like in appearance, having a long cylindrical body and a rather narrow head and pointed snout. Slightly back of the head there is a deep longitudinal fold that extends along each side of the belly to the side of the anal region. The dorsal ground color is a light gray to brown and the entire lizard has a rather shiny or glassy appearance. The sides are dark brown in color with narrow light lines extending along the edges or middle of the scale rows. There are scattered brown markings on the side of the head and neck; the underparts are entirely white.

Natural History.—The Glass Snake is a rare lizard in Illinois. Apparently it is found most often in open or semi-open country and in either dry or moist situations. Insects, as well as small snails, slugs and spiders are consumed. The tail of this lizard is easily broken if the animal is injured or handled carelessly, hence the common name, Glass Snake.

Like most other species of lizards, the Glass Snake hibernates during the unfavorable winter months. An average of 12 eggs are laid during June or July, in most cases being brooded by the female, and hatch approximately two months later.

Six-lined Race Runner (*Cnemidophorus sexlineatus*)



Distribution.—Statewide.

Description.—This species is a moderately large lizard that possesses a long, rather spiny, whip-like tail, slender body and narrow head. Except for the large plates or scales on top of the head, the upper surfaces to the base of the tail are covered with minute, granular scales, while the belly is covered with eight rows of flat rectangular scales. The ground color of the back and upper sides is a bluish-black. There are six, narrow, pale blue to bright yellow longitudinal stripes that extend from the brownish-colored head down the back and upper sides to the base of the tail or groin. The legs and tail are a light brown while the underside is whitish in color. Adults average six to seven inches in length.

Natural History.—This very fast and rather wary lizard is found most abundantly in fairly open, dry areas, preferring areas of sparse grass, weeds and other low vegetation, and where there is loose, sandy soil. They do a considerable amount of burrowing; and they use these burrows, or those dug by other animals, for hiding, depositing eggs, sleeping and hibernating. A variety of small, preferably soft-bodied insects are eaten.

Hibernation, which usually begins during the first of September and seldom ends before late May, takes place in burrows 8 to 12 inches deep in the ground. Mating probably occurs within a few weeks after the Race Runners leave their places of hibernation,

and the eggs, normally four to six in number are laid during June or the first week or two in July. The eggs are deposited usually 4 to 12 inches below the surface, and the young emerge in early August.

Little Brown Skink (*Lygosoma laterale*)



Distribution.—Approximately the southern one third of the state.

Description.—This smallest of Illinois lizards averages approximately $2\frac{1}{2}$ inches in length. As is characteristic of the Skinks as a group, the Little Brown Skink or Bronze-backed Lizard has small, rounded, very smooth glossy flat scales covering the body. The head is pointed and there is no distinct neck; the body is cylindrical and the tail is about the same length as the body. The ground color of the head and central portion of the back is a light brown or bronze, while the underparts are a yellowish white. The tail is light brown and the sides are marked in the form of a wide dark brown or black band.

Natural History.—This little inconspicuous lizard is found most abundantly on the ground in leaf litter and other debris in wooded areas. They apparently prefer a somewhat moist situation such as areas along streams, although they do often inhabit drier regions. Most appear to be active during the day (diurnal) although some apparently move about at night. A variety of small insects, millipedes and earthworms are utilized as food.

Hibernation usually begins during the latter part of October and activity again commences the following April. The eggs, which vary from one to five in number, are laid in rotted logs, stump or in humus. These are laid during June and July, and hatching occurs in August and September.

Five-lined Skink (*Eumeces fasciatus*)



Distribution.—Statewide.

Description.—The Five-lined Skink is perhaps the most colorful lizard found in Illinois, especially the young which possess a bright blue tail and five distinct narrow white or yellowish stripes on the back and upper sides that extend about halfway onto the tail. As the animal grows older, the stripes become wider, darker and less distinct and the blue tail fades to a dark gray or light brown color. In very old males, almost all pattern is lost and they become a uniform brown with a bright orange-red head and jaws. The females also become quite large although the stripes are not lost and the head seldom becomes red. The ground color of the young is a relatively uniform dark brown or black, becoming lighter with age. The scales are overlapping and smooth, giving a highly polished appearance. The snout is pointed; the head is triangular and distinct, and the tail is slightly longer than the body. Maximum length about nine inches; average length, six inches.

Natural History.—This species is a common lizard in most wooded areas of Illinois. It is usually found on the ground under leaf litter, rotted logs, stones and similar hiding places. They apparently like to sun themselves during the warm parts of the day, and they do a considerable amount of wandering. Food consists of a great many kinds of insects, larval forms often being especially preferred, as well as spiders and even small vertebrates.

Mating occurs soon after they emerge from hibernation (April) and the eggs, which average 10 in number, are deposited in rotten logs or loose soil in early summer. The female broods the eggs during the incubation period which lasts from five to six weeks.

Greater Five-lined Skink (*Eumeces laticeps*)



Distribution.—Approximately the southern two thirds of the state.

Description.—The Greater Five-lined Skink is very similar in color and pattern to that of the Common Five-lined Skink. However, there sometimes occurs an additional rather poorly defined, faded light line on either side that extends from the side of the head to the groin. This stripe is bordered above by a uniform wide black band which is in turn bordered above by the typical narrow lateral light stripe. As in the case of the Common Five-lined Skink, the color and pattern of the young is lost with age and old adults become a more uniform light brown above and on the sides. The wide black band on the sides remains evident the longest. The head becomes yellowish or orange in old individuals. The most pronounced difference between these two skinks is in the size, the Greater Five-lined Skink reaching a maximum adult length of approximately 12 inches.

Natural History.—This species is apparently quite similar to the Common Five-lined Skink in its choice of habitat and general habits. It tends to be more arboreal, however, and spends more time in trees.

Little is known of the life history of this species in Illinois. In the southern portions of its range, mating occurs in April and May. The average clutch of eggs numbers six to ten; evidently the female does not brood the eggs during incubation. The food habits of this skink appear to be similar to those of the Common Five-lined Skink.

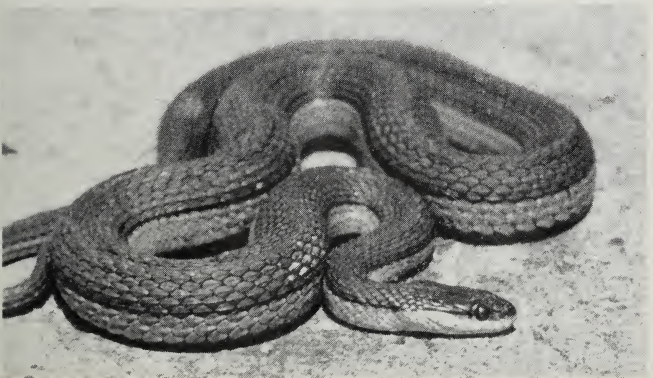
WATER SNAKES

(Genus *Natrix*)

All of the water snakes occurring in Illinois have a divided anal plate, rough or keeled scales and are dull-colored. Most of them are heavy-bodied snakes and possess a distinct triangular-shaped head so often thought to denote poisonous snakes. The eyes are rather large and prominent, the pupils round. The lip scales (labials) are large, smooth and appear polished.

As the common name "Water Snake" implies, most of these species are normally found in or near various types of ponds, sloughs and rivers, although they possess no special structure or adaptations for life in the water. They are often referred to locally as "water moccasins" and are thought to be poisonous. Although they are rather sensitive and nervous snakes, and prone to strike on the least provocation, they are not poisonous even though they are capable of inflicting a rather painful bite. Like many other species, but particularly characteristic of the water snakes, they have an unpleasant habit of exuding the contents of the anal scent glands when captured or molested, scattering the foul-smelling secretion while squirming and thrashing about.

Graham's Water Snake (*Natrix grahami*)



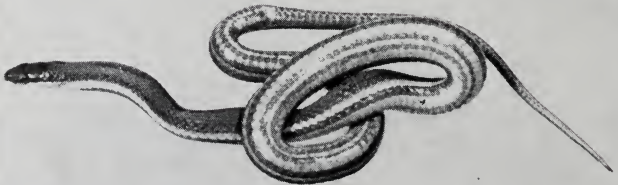
Distribution.—Statewide.

Description.—This moderately large water snake, which averages about 24 inches in length, is characterized by a broad yellow stripe along either side with an irregular narrow black border below (along the edges of the belly scales). There is an indistinct, light black-bordered stripe down the center of the back, although in some individuals this stripe is entirely lacking. The ground color of the upper parts and sides is a dark gray or brown, while the belly is yellow and only occasionally marked with small spots. The head is small and more narrow than the cylindrical body.

Natural History.—Graham's Water Snake is uncommon in Illinois. It is apparently more secretive than most of the other water snakes, and it is said to be considerably more docile than the majority of *Natrix* which usually possess a rather excitable disposition. Small fish, salamanders, frogs and crayfish are eaten, although crayfish seem to be the preferred food.

This species inhabits backwater sloughs, ponds and streams, often hiding under driftwood, brush piles along the water's edge or in crayfish burrows. The young, which average about 12 in number, are born alive in late August. They are approximately eight inches long at birth.

Queen Snake (*Natrix septemvittata*)



Courtesy Chicago Natural History Museum. From "Handbook of Snakes."

Distribution.—Approximately the northern one half of the state.

Description.—The Queen Snake is a rather slender water snake that averages about 20 inches in length. The ground color of the upper parts is a dull brown, while the ventral surfaces are a grayish yellow with two longitudinal bright brown stripes in the central portion. On some specimens there are three narrow dark stripes down the back, although these are often very faint or altogether absent. There is a pale yellow stripe extending along the lower part of each side.

Natural History.—This water snake can be considered uncommon to even rare in areas where it occurs in Illinois. It may be found at the edge of streams and creeks. The Queen Snake is fond of sunning itself on protruding branches and piles of driftwood. Although small fish and amphibians are eaten, crayfish appear to be the preferred food.

The number of young born varies considerably from eight to as many as 30, the average being around 10. At birth, which normally occurs in late August, the young are approximately eight inches long.

Green Water Snake (*Natrix cyclopion*)



Distribution.—Extreme southern Illinois.

Description.—This snake is one of the larger heavy-bodied water snakes, the adults averaging approximately 30 inches in length. The upper parts vary in ground color from a brown to greenish-brown or a plain dark green. There is an obscure poorly-defined pattern of about 50 narrow cross-bands down the back, and as the specimen ages this pattern is often lost and the snake appears to be a solid dull olive-green or brown in color. The belly

is a uniform yellow color on the anterior third, while the posterior region is a darker yellow to brown marked with numerous half circles of pale yellow or white. The tail is long, and the head is long and distinct from the neck.

Natural History.—Little is known about the life history of this water snake in the northern areas of its range. In southern regions where it is better known, the Green Water Snake prefers sluggish streams, ponds, lakes and sloughs. Like most other water snakes, this species feeds primarily on fish, amphibians and crayfish. The young, which average about 12 in number, are born in late summer, usually in August.

Plain-bellied Water Snake (*Natrix erythrogaster*)



Distribution.—Approximately the southern one half of the state.

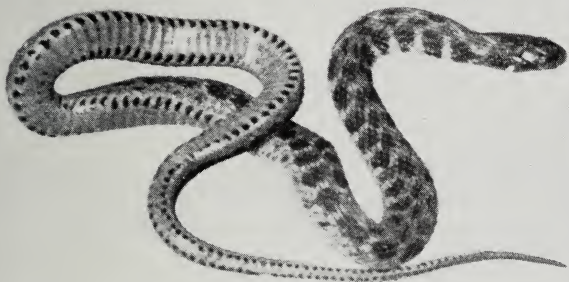
Description.—This large, heavy-bodied water snake, also known by the names Yellow-bellied Water Snake and Copperbelly, may reach a length of five feet, although adults will average about 30 inches. The head is flattened and somewhat triangular in shape. The ground color of the upper parts is a uniform black, brown or reddish brown. There is a series of 32 to 40 rectangular blotches along the middle of the back; these are very pronounced in young and half-grown specimens, but as the snake ages these become obscure. There is another series of blotches on the sides that alternate with the dorsal blotches. The belly color varies from a uniform red to yellowish and white.

Natural History.—This large water snake becomes quite abundant locally, along main river courses, marshes, streams, sloughs and ponds. It is apparently nocturnal (active at night),

although the Copperbelly leaves its place of hiding under logs and other debris to sun itself for short periods during the day. Food consists of various kinds of fish, frogs, salamanders and crayfish.

Mating probably occurs in late April and May. About 15 young constitute the average litter and at birth (sometimes in September or October) measure about nine inches in length.

Kirtland's Water Snake (*Natrix kirtlandi*)



Courtesy Chicago Natural History Museum. From "Handbook of Snakes."

Distribution.—The northeastern section of the state.

Description.—This is the smallest species of water snake found in North America; the adults average about 15 inches in length. The ground color of the upper parts varies from gray to light brown, with a pattern of four rows of about 50 round black blotches. The two rows in the center of the back, which alternate with those of the sides, are made up of smaller blotches. The under surface is a brick red in color, and bordering the brightly colored abdomen on either side is a row of dark spots.

Natural History.—Kirtland's Water Snake, a rare species in Illinois, varies from most other water snakes in that it is considerably less aquatic and is more often found in damp woods, wet meadows and in swampy places, hiding under boards, logs, bark and other suitable cover. It appears to be nocturnal in habit, searching for food and moving about at night. Although small fish and amphibians are also eaten, earthworms constitute the main item in the diet of this snake.

In Illinois Kirtland's Water Snake probably leaves its place of hibernation in late March or April. There is little detailed information available concerning its reproduction, but the few available records indicate that an average litter will contain eight young. The young are born during August and early September and vary in length from five to six inches at birth.

Diamond-backed Water Snake (*Natrix rhombifera*)



Distribution.—Approximately the southern one half of the state.

Description.—This large, very heavy-bodied water snake has a flat, triangular head and may reach a length of almost five feet. However, the average adult length is about 45 inches. The dorsal ground color varies from a light gray to olive or brownish, patterned with a chain of black, diamond-shaped markings along the back. These markings connect with the rather wide, black upright bars on the sides. The under parts are yellow and are marked with dark blotches and half circles.

Natural History.—The Diamond-backed Water Snake, a species which is exceptionally bad-tempered when aggravated or molested, may be found associated with almost every type of river, pond,

lake or swamp. It is quite common along many of the rivers, marshes, and backwater sloughs in southern Illinois. Although it will spend several hours a day sunning on top of logs, piles of brush or driftwood, or in low bushes overhanging the water, it is primarily nocturnal. A variety of foods such as frogs, crayfish, small turtles and fish are eaten, the latter being the most preferred. An average of 30 young are born in late August or early September.

Common Water Snake (*Natrix sipedon*)



Distribution.—Statewide.

Description.—This species, sometimes referred to as the Banded Water Snake, averages about 30 inches in length and possesses the rather mean disposition typical of most water snakes. It is easily identified by the gray, olive or dark brown ground color of the upper parts that is patterned with a series of from 24 to 50 crossbands (near the head), with quadrangular or squarish blotches covering the rest of the body. These alternate with the smaller blotches on the sides. The under parts are yellowish or gray and are often rather vividly marked with blotches and half circles of gray, brown or red. As is true in the case of many water snakes, the colors and pattern of this species often fade as the snake ages.

Natural History.—Probably the most common water snake in Illinois, this species is found in almost all types of aquatic environment, from ponds in city parks to large rivers, roadside ditches and sloughs. During most of the day they remain in hiding under rocks, logs, driftwood and brush piles, while at night they are active and search for small frogs, toads, salamanders and more rarely aquatic

insects and crayfish. Fish apparently make up more than 50% of their diet.

The size of the brood seems to depend on the size of the female: the larger the female, the greater the number of young. Mating occurs primarily during April and the young, which may vary in number from 10 to as many as 75, are born during August and September.

DeKay's Snake (*Storeria dekayi*)



Distribution.—Statewide.

Description.—This small, inoffensive snake has keeled scales, a divided anal plate and a slightly flattened head that is a little wider than the neck. The ground color of the upper parts is a grayish brown or olive, and there is a pale, clay-colored stripe down the middle of the back. Bordering this stripe on either side is a row of small dark spots, while the sides are marked with smaller spots or blotches. There is a dark spot below the eye and on either side of the neck, often forming a collar. The underparts vary from white to pale pink. Young specimens are normally quite dark and possess a bright yellow collar at the base of the head. DeKay's Snake is a small species, averaging about 10 inches in length.

Natural History.—DeKay's Snake is a relatively common species throughout Illinois and can be found most frequently under logs, stones, boards, trash and other ground litter, usually in damp situations. It is not uncommon to find this little snake in vacant lots and fields within the limits of towns and even large cities. They are nocturnal and feed almost exclusively on earthworms and slugs. Mating probably takes place during April and the young, averaging 14 in number, are born in July and August.

Red-bellied Snake (*Storeria occipitomaculata*)



Distribution.—Statewide.

Description.—This snake is in general similar to DeKay's Snake in size and appearance. The ground color of the dorsal parts varies from a dark gray or light chestnut to dark brown. In the case of some specimens, there is a single pale stripe down the middle of the back while others may possess two parallel rows of small black spots. Some are without any noticeable pattern on the back. There are two or three prominent pale yellow spots at the base of the skull and one on each side of the head below and behind the eye. The underparts are bright red in color (occasionally lighter toward the front) and possess two rows of tiny dark spots along the edges.

Natural History.—Like DeKay's Snake, this reptile is restricted to moist areas, quite often in wooded sections, and utilizes boards, logs, stones and similar objects for hiding places. It is rather uncommon in Illinois. Although the Red-bellied Snake is known to climb, most of its activity takes place on the ground where it obtains slugs which are eaten in preference to almost all other foods. The young are born usually during late July and August and average about seven in number.

STRIPED SNAKES

(Genus *Thamnophis*)

The common Garter Snakes and Ribbon Snake are perhaps more familiar to most persons than the majority of other snakes in Illinois because of their abundance, wide distribution and the variety of habitats occupied. They have an undivided anal plate, keeled scales, and they possess two or three pale longitudinal stripes. They appear to be directly related to the water snakes and are often found in moist situations in association with ponds, streams and similar habitats.

Great Plains Garter Snake (*Thamnophis radix*)

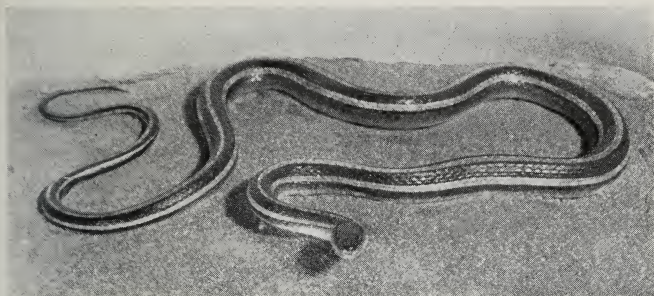


Distribution.—Approximately the northern one half of the state.

Description.—Garter Snakes can easily be recognized by the presence of three light stripes, one down the center of the back and one along each side. In the case of the Great Plains Garter Snake, the wide stripe in the middle of the back is usually a bright orange-yellow, while the lateral stripes are a pale yellow and are on the third and fourth rows of scales (see Illustrations). The ground color between the stripes varies from greenish gray to olive brown or blackish. There are two alternating series or rows of dark spots on either side between the stripes, as well as another row below the lateral stripe. The belly is bluish-green to whitish in color, often patterned with small black markings along the edges of the ventral plates or scales. The Great Plains Garter Snake averages approximately 24 inches in length.

Natural History.—This is a fairly common snake where it occurs in Illinois, inhabiting a variety of habitats such as open fields, meadows, woods' edges and even vacant fields and lots within cities and towns. Although damp fields and meadows bordering a body of water are preferred, this snakes is not restricted entirely to such situations. Frogs, toads and earthworms form the main items in the diet, although fish, tadpoles and various insects are also eaten. The breeding season is during April and May and the young, which average 25 in number, are born in August and September and are about seven inches long at birth.

Ribbon Snake (*Thamnophis sauritus*)

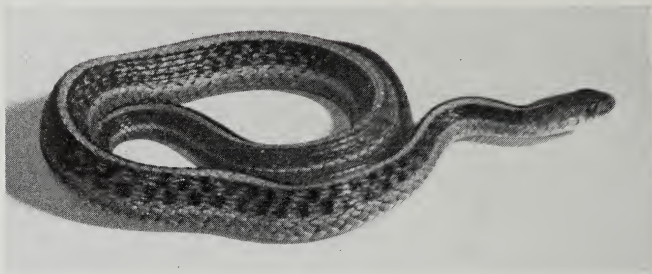


Distribution.—Statewide.

Description.—The Ribbon Snake, as the name would indicate, is a very long slender snake with a long tail that comprises about one third of its total length. The ground color of the upper parts varies from dark gray to black while the underparts are whitish or yellowish-white and unmarked. There is a pronounced stripe down the center of the back and one along either side on the third and fourth scale rows. The lateral (side) stripes tend to drop to the second and third scale rows towards the tail. The color of these narrow stripes is somewhat variable, although normally the mid-dorsal stripe is orange and the lateral stripes are greenish-white. There is a pair of small, elongated white or pale yellow spots on top of the head. Although they may reach a length of $3\frac{1}{2}$ feet, most adults will average about 26 inches.

Natural History.—Although the Ribbon Snake occurs throughout Illinois, its occurrence is rather spotty and it is uncommon except along the Mississippi River. Unlike the other Garter Snakes, this species is confined to more or less permanent bodies of water such as rivers, lakes and sloughs. It is usually found along the shores of these and similar bodies of water, especially where low herbaceous vegetation grows to the edge of the water. Like other Garter Snakes, the Ribbon Snake is diurnal. They feed primarily on small fish, frogs and salamanders. The young, which vary from 5 to 20 in number, are about nine inches long at birth, which normally takes place in July and August.

Common Garter Snake (*Thamnophis sirtalis*)



Distribution.—Statewide.

Description.—This moderately large Garter Snake averages 22 inches in length, although it may obtain a length of almost three feet. It has the three characteristic stripes, normally pale yellow or light green in color, one down the center of the back and one on each side (sometimes rather faint or obscure) that includes the second and third scale rows. There are two series or rows of alternating spots on each side between the stripes, and the spots in the upper row are often fused with each other and the spots in the lower row. There is also a series of similar dark spots or markings below the lateral stripes, separated by light areas sometimes partly shaded with red.

Natural History.—This snake is common almost everywhere in the state and inhabits a variety of different situations, although it tends to show a preference for fields, meadows and similar habitats that are associated with water. This species is active during the daytime. A variety of different foods are eaten, depending upon availability, although toads, frogs, salamanders, tadpoles and earthworms make up the bulk of the diet. Small birds, mammals and fish are occasionally eaten.

Mating apparently takes place in late spring. The average litter, which is born in August and September, will contain 25 to 30 young.

Lined Snake (*Tropidoclonion lineatum*)



Distribution.—West-central Illinois.

Description.—The Lined Snake is one of the smaller species of snakes occurring in Illinois, having an average length of 12 inches. It has a single anal plate and keeled scales. The ground color of the upper parts is a grayish-brown with the middorsal and lateral stripes similar in pattern to the Garter Snake. The middorsal or center stripe is yellowish or whitish in color, while the stripe on each side (on the second and third scale rows) is of a paler hue. This species is easily identified by the white or yellow belly that is marked with two regular rows of large, distinct black spots or half circles.

Natural History.—The distribution of this somewhat secretive, uncommon snake in Illinois is rather unusual, since it has been found in only a very few localities, and these have been towns and cities. It has been most often encountered under boards, logs, stones and trash in vacant fields and lots. It is thought that they are primarily nocturnal, coming out of hiding at night in search of food. Apparently earthworms are the principal food eaten. The average brood, which contains seven or eight young, is born during August. For the size of the snake the young are rather large at birth, measuring about eight inches in length.

Valery's Ground Snake (*Haldea valeriae*)

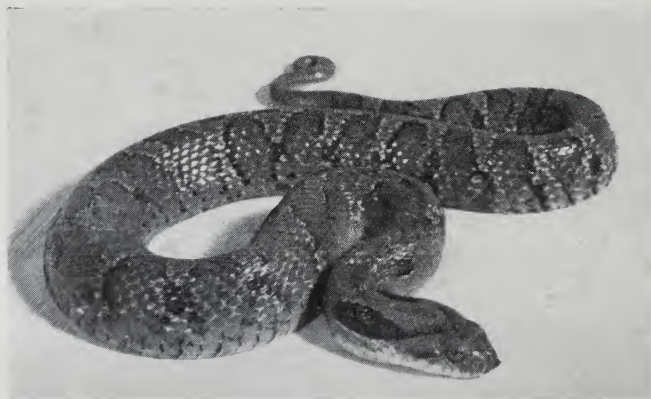


Distribution.—Approximately the southern one half of the state.

Description.—This plain colored, inoffensive snake is one of the smallest species occurring in Illinois, seldom reaching a length of over 8 or 9 inches. The anal plate is divided, and except for a few weakly keeled scales in the posterior regions, the scales are smooth. The body is cylindrical and the head rather pointed. The ground color of the upper parts is a uniform reddish-brown to gray and is normally without a pattern. Some specimens, however, possess two parallel rows of tiny black flecks down the back, and there is a pale middorsal light streak sometimes present. The underparts are yellowish-white and unmarked.

Natural History.—Valery's Ground Snake, or the Western Ground or Brown Snake as it is sometimes referred to, is common in Illinois only in a few localities. It is a rather secretive species that inhabits wooded areas and can be most often found hiding beneath logs, bark, rocks and other cover. It is a nocturnal species, coming out of hiding at night to search for food which consists almost entirely of earthworms, small insects and insect larvae. Birth of the young probably takes place in August, and it is thought that the broods are small, apparently fewer than 10 in number.

Hog-nosed Snake (*Heterodon platyrhinos*)



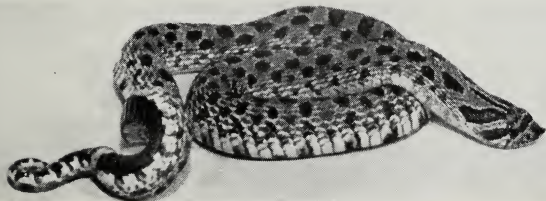
Distribution.—Statewide.

Description.—Although this snake may reach a length of almost 3½ feet, the average adult length is about 28 inches. They are heavy-bodied snakes, and although the color and pattern varies considerably, they can at once be recognized by the combination of keeled scales, stout body, stubby tail, and the distinct, wide, flat head with a moderately up-turned snout. The ground color varies from shades of yellow and orange to red, brown or dark gray. In typical specimens there is a series of square black or brown blotches down the center of the back and one or two alternating rows of spots on the sides. There is usually present an elongated, wide dark blotch on either side of the neck and a somewhat lighter, more narrow band behind and between the eyes. The belly is yellowish or gray, usually with faint irregular dark patches near the sides. The tail has alternating dark and light rings above and is a uniform light color below.

Natural History.—The Hog-nosed Snake, also referred to as Puff Adder or Spreading Viper, is a common species throughout most areas in Illinois. Although it is harmless and feeds almost entirely on toads and frogs, it is often feared as being poisonous because of its habit of flattening the head and neck (like the cobra) and expelling air with a loud hiss when molested. They will often simulate dying and roll over on their back to give the impression of being dead. Although they have long teeth and strong jaws, they are seldom known to bite.

The Hog-nosed Snake is found most commonly in dry, semi-open areas and especially in regions of loose soil such as sandy fields or shores of rivers. Mating occurs in early spring and the eggs, which average 24 in number, are laid in June or July and hatch two to three months later.

Western Hog-nosed Snake (*Heterodon nasicus*)



Distribution.—West Central Illinois.

Description.—In general the structure of this snake is quite similar to the common Hog-nosed Snake, except for the snout (rostral scale) which is more sharply turned up. The scales are keeled and the anal plate divided. The ground color of the upper parts is a light yellowish-brown or yellowish-gray, patterned with a row of about 40 dark brown or olive blotches down the middle of the back. There are two or three rows of small alternating blotches or spots along either side. In some specimens the scales between the blotches along the center of the back are a pale brown or gray, forming narrow cross-bars. The underparts are yellowish-white with a wide irregular black band down the center. The black ventral surface of the tail helps to separate this species from the Common Hog-nosed Snake.

Natural History.—The Western Hog-nosed Snake is rather limited in its distribution in Illinois, being restricted primarily to the sand areas along the Illinois River. It, like the Common Hog-nosed Snake, prefers rather dry, semi-open areas with loose workable soil in which to burrow. Toads, again, constitute the bulk of the diet although mice are readily eaten by captive specimens. Little is known of the breeding habits of this species, but they are probably similar to those of the Common Hog-nosed Snake.

Ring-necked Snake (*Diadophis punctatus*)



Distribution.—Western and southern one half of Illinois.

Description.—The Ring-necked Snake is a small species that may attain a length of about 16 inches but normally averages 12 inches. It is a slender snake with smooth scales that give it a shiny appearance. Except for the bright yellow or orange collar behind the head which is one or two scales wide, the entire upper

parts are a uniform gray-brown to blue-black in color. The belly is usually marked with many scattered, small black spots, and possesses a narrow black border composed of minute black dots. The anterior part of the belly^{*} is white or light pink, the pink gradually becoming darker toward the tail so that the tail itself is a bright red color.

Natural History.—This small, relatively common snake is encountered most often on wooded hillsides, especially along the river bluffs. During the day it may be found hiding under stones, in or under rotted stumps, logs and leaf litter. It is nocturnal, coming out of hiding during the night to search for food, which consists primarily of earthworms.

Mating occurs probably in early spring and the eggs, which usually vary from two to six in number, are deposited in somewhat moist soil in June or early July. The eggs hatch in four to six weeks and the young are about four inches long at birth.

Worm Snake (*Carpophis amoenus*)



Distribution.—Approximately the southern one half of the state.

Description.—The Worm Snake is a very small species that seldom grows to be more than 10 inches in length. The scales are smooth, giving the snake a glossy or shiny appearance. The head is small and not distinct from the neck, the eyes are small and the tail is short, ending in a sharp spine. Such characteristics are typical of many burrowing snakes. The color of the upperparts is a uniform reddish-brown to yellowish-brown, while the under-surface is colored with varying shades of pink.

Natural History.—The name of this species was well chosen, since this little snake is somewhat similar to a worm in both appearance and burrowing habits. The Worm Snake is a burrowing species and is often found abundantly under rocks and logs or in the loose soil of wooded hillsides. Like the Ring-necked Snake, it is primarily nocturnal and feeds almost exclusively on earthworms.

The number of eggs produced ranges from two to five; they are usually laid in July and hatch in September. Like the Ring-necked Snake and Ground Snake, the Worm Snake is very inoffensive and rarely if ever attempts to bite.

Mud Snake (*Farancia abacura*)



Distribution.—Approximately the southern one fourth of the state.

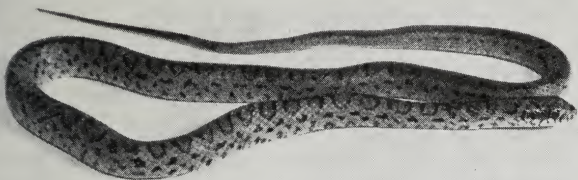
Description.—This rather large (average length about three feet) heavy-bodied snake is one of the more attractively marked species found in Illinois. The upper parts are a uniform shiny blue-black in color while the lower sides are patterned with a series of about 50 or more squarish red blotches or bars. These red markings are separated by black bars (a continuation of the black of the dorsal surface). The belly is red, with the black markings of the sides continuing onto it in the form of relatively narrow bands. In young snakes these black bands on the belly are rather uniform, but with age often take on the appearance of irregular blotches. The head is flattened and only slightly distinct from the neck; the anal plate is divided and the tail terminates in a horn-like spine. The smooth scales (except for a few on the back near the tail which are slightly keeled) add to its shiny appearance.

Natural History.—The Mud Snake, or Stinging Snake, Hoop Snake or Horn Snake as it is also sometimes called, is a rather secretive species that spends much of the time buried in soft earth or rotted logs. It occurs around muddy lakes and sloughs, swamps and marshes and is an uncommon to rare snake in Illinois. Its food consists primarily of amphibians, although some insects and worms are also eaten.

The number of eggs laid by this snake varies from about 20 to as many as 100 in number, although the average clutch would probably contain 30 to 35 eggs. Very little is known about this

species in its natural habitat. Records of captive specimens show that mating and egg-laying may normally take place in July and hatching in October. The young are about eight inches long at hatching.

Racer (*Coluber constrictor*)



YOUNG



ADULT

Distribution.—Statewide.

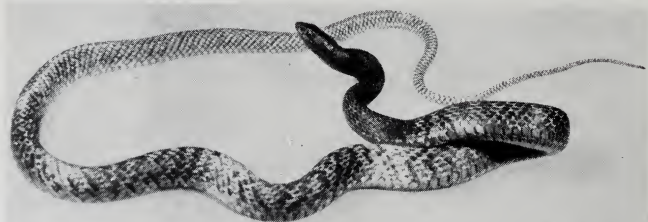
Description.—The Blue Racer is a long slender snake that averages 4½ feet in length. The adults are uniform in color with-

out markings, the upper parts being a pale greenish-olive becoming blue-green on the sides. The belly varies from a light greenish or pale bluish-yellow to whitish, while the chin and throat are yellow. The young snakes are marked quite differently, however. Up until the time they are 16 to 18 inches long, they possess a median row of 65 to 80 chestnut-colored blotches down the back and on the anterior third of the tail. There are numerous reddish-brown or blackish dots along each side and on the belly. After the snake reaches a length of about 18 inches, these markings gradually fade until they are all completely lost. The anal plate is divided, and the scales are smooth, giving the snake a shiny or glossy appearance.

Natural History.—This snake is common throughout Illinois and occurs in a large variety of habitats from open fields and prairies to wooded areas and may be found in both dry and moist situations. It is active during the day, searching for food which varies widely from insects, other reptiles, small mammals, birds and amphibians to eggs. The nights are spent under logs, stones and similar retreats. They are fast moving snakes, nervous and excitable, and if captured will bite viciously, seldom becoming tame if kept in captivity.

The eggs, which number 8 to 25, are laid in June and July and are deposited in the ground or in rotted logs, stumps and other debris. Hatching occurs approximately two months later, the young being about 10 inches in length.

Whip Snake (*Masticophis flagellum*)



Distribution.—The extreme southwestern edge of the state.

Description.—This western and southern species is a long (average length $4\frac{1}{2}$ feet) and slender snake, although somewhat more heavy-bodied than the Racers. The adults are without any markings, the head and anterior part of the body being dark brown or black, the color gradually becoming noticeably lighter toward the tail. The young of the Whip Snake, or Coachwhip, are colored differently than the adults and possess a definite pattern. The ground color is a light brownish yellow; on the back there is a series of narrow, irregular-edged dark brown crossbands that are quite distinct anteriorly but gradually fade and disappear toward the base of the tail. The head is irregularly marked with light and dark areas, and the belly is whitish or cream colored with two center rows of dark spots that become dim posteriorly, gradually disappearing. The scales are smooth and the anal plate divided.

Natural History.—The Coachwhip is a rare snake in Illinois, being known thus far by only a few specimens obtained along the Mississippi River bluffs in Monroe County. In regions where it is common, it is found primarily in open grassy areas, although it is quite capable of climbing. They are active during the day and, like the Racers, can move very fast. Food consists of small mammals, lizards, other snakes and the larger insects.

In certain western regions where it occurs, mating takes place in April and May. The number of eggs laid is relatively small, the average clutch consisting of about eight eggs.

Rough Green Snake (*Opheodrys aestivus*)



Distribution.—The southern one half of the state.

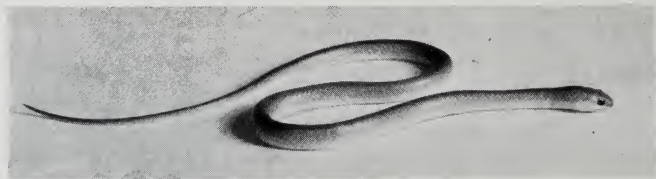
Description.—The Rough Green Snake is well named, for the scales are prominently keeled and the ground color of the upper parts is a uniform pea green or dark leaf green. The chin and

throat are pale yellow, while the other ventral surfaces are yellowish-white. This snake is quite long and slender ($\frac{1}{2}$ to $\frac{3}{4}$ of an inch in diameter), averaging about 28 inches in length although it may reach a maximum of $3\frac{1}{2}$ feet. The head is distinct from the neck, the anal plate is divided and the tail is very long, making up one third to one half of the total length.

Natural History.—This species is fairly common in the southern half of Illinois. It is unlike most other snakes found within the state because it is primarily arboreal in habit, climbing and searching for food in bushes, vines and small trees anywhere from 2 to 15 feet above ground. They apparently prefer fairly open fields, woods and marshes. They are diurnal (active during the daylight hours), often lying quietly for considerable periods of time in a low bush or tree with the head and a few inches of the neck extended upward. Their food consists almost entirely of insects, the larvae of moths and butterflies being especially preferred, although grasshoppers, crickets and snails are readily eaten.

The eggs, which are laid in July and vary in number from three to nine, are usually deposited in rotted logs and stumps. Hatching occurs approximately two months later and the young are a dull grayish-olive color. They shed the skin in about a week, and the color then becomes a bright dark green.

Smooth Green Snake (*Opheodrys vernalis*)



Distribution.—Approximately the northern one half of the state.

Description.—This snake is quite similar to the Rough Green Snake except that the scales are definitely smooth, being without keels. The Smooth Green Snake also differs in that the ventral surfaces are more whitish with less yellow, the upper parts are a dark greenish-blue and the body is a little stouter than that of

the Rough Green Snake. The average length is 14 inches, although it may reach a maximum length of approximately 20 inches.

Natural History.—The Smooth Green Snake is also arboreal in habit although apparently to a much lesser degree than the Rough Green, however, climbing and spending some time in low bushes and shrubs. The Green Snakes are well protected by their coloration, blending into the green background of leaves. It is active during the day and is found most abundantly in relatively moist, grassy situations. Like certain other small snakes, the Green Snakes often occur fairly abundantly in one small area and are rare or absent in neighboring regions. Food consists primarily of insects, although spiders, snails and, more rarely, amphibians are eaten.

Normally the Smooth Green Snake lays eggs, the usual clutch averaging 7 in number. However, there are a few rare instances in which they apparently gave birth to living young. There is a short incubation period, and the eggs hatch within 4 to 23 days. They are usually laid in late July and August.

RAT SNAKES

(Genus *Elaphe*)

These snakes are among the largest found in Illinois, and certain species included within this group are very richly colored and attractively patterned. They are characterized by a divided anal plate and scales that are smooth on the sides of the body, but weakly keeled in the middle of the back. They are all constrictors, feeding to a large extent on rodents such as rats and mice, and consequently are of considerable economic value.

Rat Snake (*Elaphe guttata*)



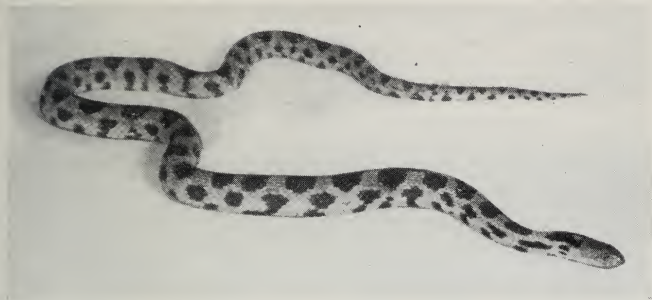
Distribution.—The extreme southwestern edge of the state.

Description.—This is one of the larger, heavy-bodied, handsomely marked snakes that averages about three feet in length, but reaching a maximum of almost four feet. The ground color of the upper parts is brown or gray, while the ventral surfaces are yellowish-white, prominently checkered with large black squares. There is a pattern of about 35 to 45 red-brown squares, narrowly edged with black down the back. There is a row of circular blotches on each side, and yet another row of smaller, irregularly shaped blotches on the lower sides that alternate with the row above. From the neck immediately behind the head, a spear-shaped blotch (lighter in the center) extends forward on top of the head to the area between the eyes. The head is distinct from the neck, the anal plate divided and scales are smooth except for a few rows in the center of the back which are weakly keeled.

Natural History.—This attractive snake is very rare in the state and nothing is known of its life history in Illinois. In regions where it is more abundant, the Rat Snake is usually found on the ground in fields and thickets in relatively dry situations. However, it is a good climber and often ascends trees in a search for young birds. It feeds primarily on mammals, especially rats and mice.

The Rat Snake will lay from 12 to 24 eggs, usually depositing them in damp soil or debris of some sort. Hatching takes place six to eight weeks later.

Fox Snake (*Elaphe vulpina*)



Distribution.—Approximately the northern two thirds of the state.

Description.—The Fox Snake (or Spotted Adder) is a large, rather heavy species that has a series of 33 to 51 square, black-bordered dark brown blotches down the center of the back and a row of smaller, rounded brown blotches on either side that alternate with those on the back. These blotches on the back and sides overlay a ground color varying from yellowish-gray to light brown. The under parts are yellow, prominently checkered with large, squarish, black blotches. Usually there is a row of elongated, small black blotches on the lower sides where the belly scutes (or scales) begin. The head is a coppery or reddish-brown color with a dark cross-band in front of the eyes and one from each eye to the angle of the mouth. The Fox Snake may reach a length of five feet or more, although the majority of adults average about 3½ feet. The head is distinct from the neck, the anal plate is divided, and the scales of the back and upper sides are weakly keeled. Scales of the lower sides are smooth.

Natural History.—This common snake, occasionally mistaken for the Rattlesnake or Copperhead, is found most often in cultivated fields, pastures and woods-edge. The Fox Snake is a good climber, and is often found near out-buildings during the day in search of rats and mice upon which they mainly feed. Like the Bull Snake and a few other species, this snake will occasionally hiss and vibrate its tail rapidly when aggravated or molested.

The average clutch consists of 12 to 14 eggs. These are laid usually during the latter part of July and are deposited in rotted stumps, logs and various types of debris. The young are about 11 inches long at hatching, which occurs seven to eight weeks after the eggs are laid.

Pilot Black Snake (*Elaphe obsoleta*)



YOUNG



ADULT

Distribution.—Statewide.

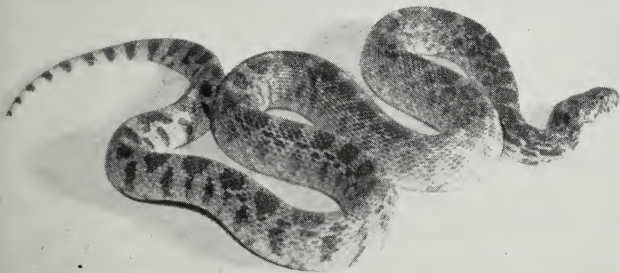
Description.—The Black Snake is one of the largest species occurring in Illinois; adults will average about 4½ feet in length, although there are authentic records of specimens over eight feet long. The head is flat and distinct from the neck, the anal plate is divided and the scales are weakly keeled. The young snakes have

a gray ground color above with a series of 28 to 38 well defined, quadrangular light brown blotches down the center of the back. On each side there are two series (often fused or irregular) of smaller spots that alternate with each other and with the dorsal spots. The belly is whitish or yellowish, sprinkled with irregular, extensive dark blotches. There is a dark bar between the eyes, and one behind each eye running back along the side of the head. The majority of adults are a uniform black above, although occasionally blotches, particularly those of the sides, remain evident and are sometimes bordered with white or light red. The belly is dark-colored, occasionally tinted with blue-black and crossed with irregular, dark lines or blotches.

Natural History.—This snake is fairly common throughout Illinois and is usually found in moist, wooded regions. It is active primarily during the day. The Black Snake is a good climber and often puts this ability to good use in searching for birds and their eggs. However, small mammals such as rats, mice and ground squirrels constitute the major items in the diet.

Apparently mating takes place in May and June and the eggs, which vary from 7 to 22 in number, are deposited during July and August in rotted logs, stumps, sawdust piles, loose earth and other places in or near the ground. The young are 12 to 14 inches long when they hatch approximately $2\frac{1}{2}$ months later.

Bull Snake (*Pituophis catenifer*)



Distribution.—Approximately the western one half of the state.

Description.—The pointed snout and the enlarged and projecting rostral scale (the scale at the tip of the nose) will distinguish the Bull Snake from all other species in the state. It approximates the size of the Black Snake, averaging about five feet in length and $1\frac{1}{2}$ inches in diameter. The ground color of the upper parts varies from orange to brown or reddish-yellow, while the chin and throat are yellowish-white and the belly yellowish with large black squares. There are between 33 and 73 large, square blotches on the back; these are black on the anterior portion of the snake, becoming brown or reddish-brown near the middle and then again dark brown or black on the tail. Along each side there are three or four rows of more or less indistinct small dark blotches which tend to run together. The head is speckled with black. The anal plate is not divided and the scales are keeled.

Natural History.—The Bull Snake is common only locally, especially in sandy areas similar to those along the Illinois River in central Illinois. It is a terrestrial, diurnal species that inhabits open, sandy prairies and cultivated fields. It is perhaps one of the most efficient natural rodent exterminators, feeding almost exclusively on rats, mice, ground squirrels and rabbits, the larger animals being first killed by constriction. Although these snakes usually strike often when first captured, they readily eat in captivity, soon become tame and consequently make good pets.

The average clutch, laid in July, will contain about 14 eggs. Apparently they are deposited in loose soil. The eggs hatch in about eight weeks and the newly hatched young snakes average about 15 inches.

KING AND MILK SNAKES

(Genus *Lampropeltis*)

The two species of king snakes and the Milk Snake occurring in Illinois are characterized by the single anal plate, cylindrical body, rather small head only slightly distinct from the body, and smooth scales which give the snake a shiny appearance. The King Snakes are noted for their habit of feeding on other species of snakes, both poisonous and non-poisonous, although other animals such as rats and mice are eaten. Most of their prey is killed by constriction.

Yellow-bellied King Snake (*Lampropeltis calligaster*)



Distribution.—Approximately the southern two-thirds of the state.

Description.—The ground color of the upper parts of this King Snake are an olive gray or gray-brown, while the ventral surfaces are yellowish or whitish and checkered or clouded with irregular dark gray markings. Although the pattern of the dorsal surfaces is somewhat variable, it normally consists of a series of 46 to 78 dark gray or brown, black edged, rather narrow irregular blotches down the middle of the back. On either side there is a series of two or three rows of smaller, dark-edged gray or brown spots that alternate with the dorsal blotches and each other. There is often a dark band across the snout and a dark stripe running from behind the eye to the angle of the mouth. The Yellow-bellied King Snake (also called a Blotched or Prairie King Snake) is a relatively stout snake with the head only slightly distinct from the neck and a tail that is short and rather blunt. The adults average about three feet in length.

Natural History.—This common snake is most often found in association with open cultivated fields, grasslands and prairie. They are primarily nocturnal (active at night), searching the open fields, roadsides and areas around out-buildings for rodents, especially mice, which form the major item in their diet. These snakes usually remain under stones, boards and similar objects during the day.

The eggs are usually laid sometime during July and apparently are most often deposited in the ground. It is thought that about 14 eggs constitute the average clutch; the young are about 10 inches long at hatching, which takes place in September.

King Snake (*Lampropeltis getulus*)



Distribution.—Approximately the southern one third of the state.

Description.—This species, often commonly referred to as the Speckled King Snake, Black King Snake or Salt-and-Pepper Snake, averages about three feet in length. The ground color of the upper parts is black or greenish black, the adults of the more western race having a pale yellow or whitish spot in the center of every dorsal scale. These spots increase in size on the lateral (side) scales, the scales appearing light with a black border. The light spots are often arranged to form spotted cross-bars. The race or subspecies occurring in eastern Illinois differs in that each scale is not spotted, but rather there are between 70 and 95 rows of minute yellowish dots that cross the back. These dots crisscross on the sides forming a chain-like pattern. The under surfaces of both races are white or yellow and heavily checkered with black squares or blotches.

Natural History.—This King Snake is commonly found in or near dry woodland, although it often occurs around water and in moist situations. It is an active and aggressive species, foraging about at night in search of food which consists of other snakes, lizards, eggs, small mammals and more rarely birds.

Mating takes place in May and the eggs, which vary from 3 to 14 in number, are laid in July. The eggs hatch from late August to early October, and the young are about 10 inches long at hatching.

Milk Snake (*Lampropeltis doliata*)



Distribution.—Statewide.

Description.—There are two races or subspecies of the Milk Snake occurring in Illinois, and they vary considerably in pattern and coloration. The northern race (*L. d. triangulum*), occurring in the northern part of the state, is characterized by a series of 35 to 50 gray, dark brown or maroon saddle-shaped markings bordered by black down the middle of the back and tail. There is a row of similar but smaller, more rounded blotches on each side that alternate with the dorsal markings. These blotches are some shade of red in young snakes. The head is light brown or reddish in color with a dark patch up to the eyes and a black stripe running from each eye to the angle of the mouth. There is a light V or Y-shaped mark with a black border on the neck. The under surface is yellowish or white, checkered with black squares. It is a fairly slender snake, having an average length of 30 inches. The race that occurs in the southern third of the state (*L. d. sypila*), referred to as the Red Milk Snake, has fewer (less than 35) but larger blotches on the back. They extend further down on the sides, and the other row of blotches on the lower sides are very small. The top of the head is a uniform red, and the blotches of the back and sides are bright red or orange-red in color. This Red Milk Snake averages about two feet in length.

Natural History.—The Milk Snake is relatively uncommon in Illinois and shows little preference as to habitat, occurring in open fields, wooded areas and even in city lots. They appear to be primarily nocturnal, and their food consists chiefly of small rodents, although some small snakes and lizards are occasionally taken.

The eggs, which vary in number from 6 to 16, are thought to be laid primarily during June and July in the ground or refuse piles. The young, which are about nine inches long at hatching, appear in September and are usually redder than the adults.

Scarlet Snake (*Cemophora coccinea*)



Courtesy U. S. Fish & Wildlife Service

Distribution.—Extreme southern Illinois.

Description.—This rather slender, cylindrical snake is characterized by the combination of a pointed snout that projects over the lower jaw, a head not distinct from the neck, smooth scales and an anal plate that is not divided. It is a small species, the average length being about 16 inches. The top of the head is red, having a black band directly behind the eyes which is followed by a yellow ring. There is a pattern of wide red blotches down the back and onto the tail. These blotches are separated by pairs of narrow black bands, each pair enclosing a wider band of yellow. There are other irregular black markings on the lower sides. When viewed from above it appears to be ringed, but none of the rings extend onto the belly. The under surfaces are white or yellow and unmarked.

Natural History.—This is an extremely rare snake in Illinois, being known from only one specimen taken in Union County. Nothing is known of its life history in Illinois, but in certain eastern states where it occurs more commonly, the Scarlet Snake (sometimes called the False Coral Snake) is said to be a rather secretive, burrowing species. Apparently small mice, snakes and lizards are eaten. Little is known of its breeding habits. The information available indicates that the eggs are laid in June and may average eight in number.

Slender Flat-headed Snake (*Tantilla gracilis*)



Distribution.—Extreme southwestern Illinois.

Description.—This small, inoffensive snake seldom reaches a length of over eight or nine inches. The anal plate is divided, the scales are smooth and the head is quite noticeably flattened. The Slender Flat-headed Snake is very plain in appearance, the upper surfaces and sides being a uniform light yellow-brown above while the belly is whitish and also unmarked. The head is occasionally a little darker brown than the rest of the body.

Natural History.—The Slender Flat-headed Snake is quite rare in Illinois and has been found thus far only along the rocky bluffs of the Mississippi River. They are burrowing and rather secretive snakes, being found most often under stones, logs and other debris. They are thought to be nocturnal, foraging under and around rocks, logs and ground litter for food which consists of small insect larvae and other small animals such as centipedes. Although they possess a poisonous saliva that is possibly used as an aid in subduing prey, the small size of the snake and the weak poison make them entirely harmless so far as man is concerned. The poison is apparently conducted into the wound through faint grooves in a pair of enlarged teeth located in the rear of the mouth.

The number of eggs produced by this snake varies from one to four, and they are laid in June and early July. The eggs hatch during the first half of September.

PIT VIPERS

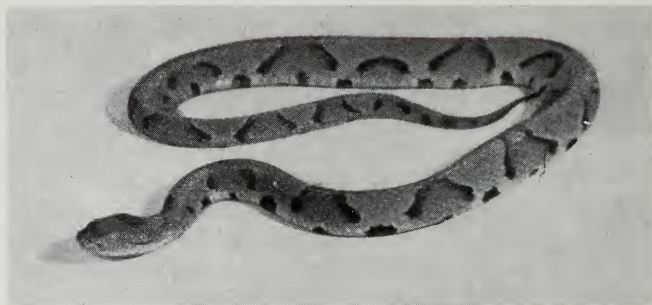
(Genera *Ancistrodon*, *Sistrurus* and *Crotalus*)

The four species of venomous snakes occurring in Illinois are characterized by a pair of hollow, hypodermic-like fangs located in the upper jaw in the front of the mouth, a facial or loreal pit

(a depression between the eye and nostril) which is sensitive to temperature changes, and the vertical, cat-like pupil of the eye. They all have a single anal plate, keeled scales and a distinct triangular-shaped head.

Except for very local and seasonal populations, the Moccasin, Copperhead, Massasauga and Timber Rattlesnake are comparatively uncommon to rare in Illinois. Because of the fact that they possess venom and are potentially quite dangerous, particularly the larger Timber Rattlesnake and the Cottonmouth Moccasin, they are usually killed whenever encountered. Actually, these poisonous species are economically very valuable since they feed to a large extent on destructive rodents and other pests.

Copperhead (*Ancistrodon contortrix*)



Distribution.—Approximately the southern one half of the state.

Description.—The Copperhead is one of the four species of poisonous snakes known to occur in Illinois. It is attractively marked, having a series of 10 to 20 dark-edged cross-bands across the back and sides, each about one-half as wide at the middle of the body as at the sides. There is another series of blotches or spots on either side that alternate with the dorsal bands. These blotches and bands overlay a ground color that varies from a light yellow-brown to a dark gray-brown or bright red-brown. The head is flattened, considerably wider than the neck and is covered on top with nine large scales or plates. It is often a brighter red or copper color, having a narrow black line running from each eye to the angle of the jaw. The under surface is whitish,

mottled with dark-brown blotches, and the tail is yellow in young snakes. Most adults will average 30 inches in length.

Natural History.—The Copperhead is an uncommon snake in Illinois. It normally inhabits wooded areas, preferring hillsides with rock outcroppings, and can be found during the day in and under rock crevices, logs, brush piles and similar retreats. Food consists primarily of small rodents, although birds and large insects and their larvae are also eaten. Larger prey is struck and released and then searched for after its death by use of the tongue and the loreal pit (see Introduction).

Mating takes place in April and May and the young, which vary from 2 to 10 in number, are born in August and September and measure about 8½ inches at birth. The Copperheads hibernate during the colder months, and dens have been found containing large numbers of these snakes.

Water Moccasin or Cottonmouth

(*Ancistrodon piscivorus*)

Distribution.—Extreme southern and southwestern Illinois.

Description.—The ground color of the upper parts varies from a light coppery-orange to light reddish brown or light gray-brown (in the young). There are between 10 and 16 dark-edged crossbands on the body that are narrower in the center of the back, widening on the sides. There are usually one to several black spots in the center of these bands on the lower sides. The belly is whitish and checkered with irregular black squares, becoming a more solid black toward the anus. As in the case of young Copperheads, the end of the tail is yellow. As the snake becomes older and larger, the crossbands and other markings fade and become dim as the ground color darkens, becoming almost black, and in large specimens the patterns can hardly be distinguished. The Cottonmouth is a very heavy-bodied snake with a short stubby tail; adults average about 36 inches in length.

Natural History.—The Cottonmouth is seldom seen away from water, and in southern Illinois it occurs commonly along the main river courses and adjacent sloughs, marshes and swamps. It is primarily nocturnal although it can often be found sunning itself on the bank, a floating log or similar object. Food consists of frogs, fish, turtles, small mammals and occasionally birds. Members of

the genus *Natrix*, the common water snakes, are most often confused with this poisonous species.



YOUNG



ADULT

Mating takes place in March or April and the young, which vary from five to fifteen in number, are born in August and September and measure approximately 10 inches at birth. In late September and early October, the Cottonmouths will leave the water and seek out dens in the river bluffs, often hibernating in large numbers with members of its kind and other species as well. In more isolated sloughs and swamps, it is thought that they hibernate in and under stumps, logs and similar retreats.

Massasauga (*Sistrurus catenatus*)



Distribution.—Statewide except for the most southern sections of Illinois.

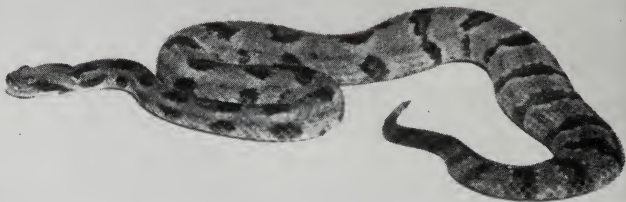
Description.—The Massasauga is the smaller of the two species of rattlesnake occurring in Illinois, averaging about 22 inches in length. The ground color of the upper parts is a gray-brown, patterned with a series of 21 to 50 large, somewhat irregular squarish dark blotches, usually with light narrow borders down the center of the back. There are two less distinct rows of smaller black spots on either side, most of which alternate with the dorsal blotches and each other. The under surfaces are usually dark and heavily blotched, or light with many irregular dark markings. The head is somewhat flattened, triangular in shape with nine large plates or shields on top, and is quite distinct from the neck. There is a small rattle on the end of the tail, and a new segment is usually added to the rattle at each molt or shedding of the skin.

Natural History.—Although the Massasauga is found throughout most of Illinois, it is an uncommon or rare snake in the state, having a rather local or spotty distribution. It most often occurs in marshy or damp situations, although it may be found during the summer in drier, more upland fields or prairie. It feeds to a large extent on small mammals such as mice, although occasionally small

birds and frogs are eaten. Although it tends to be rather pugnacious and is often quick to strike, the bite is seldom very serious. Because the snake is uncommon and relatively small, it seldom if ever becomes a menace as does the larger and more dangerous Timber Rattlesnake.

The young are born in late summer, usually in September, and vary in number from 4 to 13. They are approximately 8½ inches long at birth. The rattle of the newly-born snake consists of a simple, blunt "button" at the end of the tail; each subsequent molt adds a new segment to the rattle. They molt between two and four times a year.

Timber Rattlesnake (*Crotalus horridus*)



Distribution.—Statewide except for the northeastern sections of Illinois.

Description.—This Rattlesnake is the largest species of poisonous snake found in Illinois, possessing a wide, flattened head that is very distinct from the neck and a thick, heavy body. The majority of adults will measure between 3 and 3½ feet in length. There is a series of 18 to 33 wavy chevron-shaped black bands, narrowly margined with white or yellow, crossing the back and sides. These overlay a ground color of varying shades of gray. There is a wide, black band extending from the eye to about the angle of the mouth. In older snakes the tail is a solid black, a character from which it derives a common name of "Velvet-tail." It is also called the Banded Rattlesnake, and some are referred to as the Cane-brake Rattler. The under parts are grayish-white, speckled with irregular dark markings. Some specimens have a yellowish or reddish-brown streak down the middle of the back.

Natural History.—The Timber Rattlesnake is now uncommon in most areas in Illinois and is restricted primarily to the rocky bluffs of the Illinois and Mississippi rivers. Although it is a potentially dangerous snake, it inhabits densely wooded hillsides and bottomlands seldom visited by most individuals. The Timber Rattlesnake feeds on a variety of animals such as mice, rats, ground squirrels, rabbits, ground-nesting birds and their eggs. They are thought to strike and release such prey as mice and rabbits, searching for it after its death, while birds are seized and held until death occurs.

The young, which vary from 5 to about 14 in number, are born in late summer (usually in September) and measure about 11 inches in length at birth. Hibernation usually begins in late September or October, and they often congregate in large numbers in one den. Natural, deep rock crevices and small caves in rocky hillsides appear to be the preferred den sites.

COLLECTING SPECIMENS

There is a variety of techniques used for collecting specimens of reptiles although the few standard methods mentioned here are used by most collectors. For the beginner, a review of the various texts and papers on reptiles would be of value. A knowledge of what is to be expected in the region in which one intends to collect and specifically where to look for a given species, (for example, in wet meadows, upland pastures and fields, under rocks and logs near a stream, sloughs, etc.), as well as its general habits, is a definite aid.

Although a few species may be found only during the early spring and summer, the majority of turtles, lizards and snakes can usually be seen throughout the warm summer months and early fall days in environments or habitats with which they are associated. With the majority of reptiles found in Illinois, hibernation (a period when the animal is in a dormant condition) generally begins with the onset of cool weather in late September and October, and activity does not begin again until the following spring. The length of time spent in hibernation varies with the species, the general weather conditions and the particular locality or region. During the time when the different species of reptiles are buried in the ground or in pond and river bottoms, in and under rocks, logs, stumps, brush piles and other kinds of debris, they are extremely difficult to find or collect. The best collecting may be had during spring and summer.

By seining the shallow edges of lakes as well as ponds, marshes and streams, turtles and aquatic or semi-aquatic snakes may often be collected. Submerged or partially submerged logs, piles of brush, driftwood and other debris in the shallow water along the edge of ponds, marshes and rivers often serve as good hiding places for turtles and snakes. By hauling such material ashore and carefully picking through it, different species of reptiles may be found.

Occasionally turtles are caught on trotline hooks, in fish traps and by other fishing equipment. Various types of turtle traps can be employed and are perhaps one of the best means of catching the more wary aquatic species. Although these traps may vary in size and construction, the majority consists of a wire basket built

around a wood frame, open at the top with one to several boards leading part way into the center. The trap may be baited with fish or other foods. The turtle will climb upon the lead-in boards or edges to obtain the food or simply to sun themselves; when they re-enter the water, those dropping into the enclosure are unable to climb out over the projecting edges of the partially submerged trap. Turtles may also be collected by observing the edges of ponds and streams for small holes in the mud and sand through which their heads may have projected, and they can often be uncovered by feeling or probing with the hands.

Probably the most rewarding collecting comes from examining and turning over or tearing apart every possible type of cover. Except during hot and dry summer periods when collecting is generally poor, turning over logs, rotted stumps, boards, stones, cardboard and junk of all kinds will provide the collector with desired specimens. Many snakes and lizards will occupy areas under loose boards and utilize rotted logs and stumps; by breaking up such retreats they may be easily found.

Although none of the lizards occurring in Illinois are poisonous, some of the larger specimens may deliver a painful bite. It is a good policy to grasp the lizard firmly around the body, using the thumb and forefinger to hold the head and prevent the lizard from turning and biting. By handling a lizard in such a manner, you also reduce the animal's struggling to a minimum, which in turn reduces the chance of its breaking off the tail. The majority of snakes that most individuals will encounter in Illinois are harmless and consequently can be handled with safety. Some of the larger nonpoisonous snakes can inflict painful bites, however, and therefore should be held firmly around the body and neck or head.

Since there are four species of poisonous snakes occurring in Illinois, amateur collectors should collect all snakes by the safest possible means, as if they were venomous, until they can be positively recognized. Rattlesnakes will often warn an individual of their presence by buzzing or rattling the tail, although this is certainly not always the case. It is popularly believed that the Cottonmouth Moccasin cannot bite underwater; actually they are quite capable of doing so. Extreme care should be exercised in

picking up venomous snakes, first by pinning the head firmly to the ground and secondly by grasping the snake by the neck and/or rear of the head and holding the head tightly, making it impossible for the snake to turn the head or twist the jaws about and inflict a wound with the exceedingly moveable fangs.

A noose on a long stick is sometimes used to collect poisonous species. Although a stout, blunt stick is perhaps best, a forked stick may be used successfully if the arms of the fork are made very short so that they do not obstruct a firm grip on the neck. If the specimens are to be later preserved, the use of a .22 caliber rifle or pistol, using .22 caliber long rifle shot shells, is quite effective in collecting fast moving lizards and snakes.

Until the specimens can be preserved or placed in permanent containers, some type of a close-knit cloth bag (flour, sugar or feed sack) usually provides the best holding device in the field. They should first be checked carefully for holes. After a specimen has been placed in the collecting bag, the top should be folded over and tied tightly with a strong cord. Jars with holes punched in the lids can be used in the field, but they are rather awkward to handle. It is important to keep captured reptiles cool since over-heating will quickly kill them. This may be accomplished by soaking part of the collecting bag or by placing moist leaves or moss in with the specimens.

PRESERVATION OF REPTILES

In order to preserve reptiles properly, three simple but essential steps should be followed: (1) Kill the specimen immersing it in weak alcohol of about a 40% dilution. (2) Harden the specimen by placing it in 10% formalin (one part commercial formalin with nine parts of water). This solution may also be used for permanent storage. (3) Label the specimen.

The actual process of killing generally takes from several minutes for small reptiles to several hours for the larger forms. As soon as the specimen is dead, it should be removed from the alcohol. Other methods of killing may be used, but alcohol satisfactorily relaxes the animal and is easily obtainable. Formalin may be injected into the body cavity to preserve the viscera. However, it is perhaps easier and more satisfactory to make a deep, long

cut in the belly of lizards and snakes to allow the formalin to penetrate. The underside of the tail should also be cut, care being exercised to avoid breaking the tail. In the case of turtles, the skin between the arms and neck and between the legs and bridge should be slit and deeply penetrated with a knife to allow the formalin to enter.

Lizards should be arranged in a normal walking position and turtles in a walking position with the legs, head and tail extended before placing them in formalin for hardening. The mouth of turtles should be propped open with a piece of wood or some similar object, thus allowing the edge of the jaws, a character used in identifying certain species, to be easily seen. It is a good policy in the case of large snakes to cut the belly from the throat to within a few belly scales of the anal plate, and remove the viscera (internal organs). Snakes are best preserved and retained by coiling them in a jar of appropriate size, with the underparts facing upward (to keep air pockets from preventing the thorough exposure of all parts to the formalin).

A point that cannot be over emphasized is that of labelling correctly all specimens collected. A small label containing the collector's name and field number, locality (county, state, distance and direction from the nearest town), and collection date should be attached to each specimen. The label, preferably some type of waterproof paper, should be strung (No. 8 white thread) and the information on it written in pencil or in Higgin's Eternal Ink. It is a good policy to keep an accession list or field book in which the same data for each specimen is recorded, along with the corresponding field number. Additional information of value that may also be kept in a field book is the exact place of capture (under rock, in shallow pond, etc.), time of capture, general climatic conditions, and abundance of species captured. The same information should be kept with specimens that are retained alive for a period of time. Too often insufficient or no information is kept with specimens.

THE CARE OF LIVE INDIVIDUALS

Live reptiles are often kept as pets by various interested persons and for exhibit and other purposes by teachers. These animals

can be kept with little care or expense, provided certain feeding and sanitation problems are considered. Aquaria of various sizes provide one of the most satisfactory and attractive containers in which to keep live turtles, lizards or snakes.

In the case of land-dwelling species such as the box turtles, it is advisable to place several inches of soil in the aquarium and to cover the soil with a layer of leaves or humus under which the turtle may hide. Although much of the water needs of terrestrial turtles are obtained from the internal break-down of foods, they occasionally drink, and a shallow dish or container of water should be available to them at all times. Aquatic species of turtles such as the Mud and Musk Turtles, Painted Turtle and Slider should be placed in aquaria large enough to allow a certain degree of movement and to prevent over-crowding. The depth of water necessary will vary depending upon the size of the turtle, but in any case they should be provided with a fairly smooth rock, piece of wood or a similar object upon which they may occasionally crawl and leave the water.

All turtles should be kept in places where they may occasionally be exposed to sunlight. Turtles kept in captivity for extended periods of time often develop a softening of the bones and shell. This may be due to one or several factors, primarily a lack of sunlight, improper diet and/or insufficient calcium in their food. Turtles should be supplied with green vegetation from time to time, even those species that are primarily carnivorous (flesh eaters), and, in the case of aquatic species, bits of hamburger, chopped fish, worms, insects and similar foods will meet their diet needs (see food habits under the individual species). By adding chopped bone or bone meal, sprinkled on or mixed with the food, the necessary calcium will be supplied. It is most important to keep the water in an aquarium clean; frequent changes will prevent it from becoming muddy or foul. Baby turtles that are sold with their shells painted various colors and designs will soon die if the paint is not flaked off promptly, since it seriously interferes with the growth of the shell.

Lizards found in Illinois may be satisfactorily kept in a moderately sized aquarium (terrarium). In addition to one to several inches of soil placed on the bottom of the terrarium, an

additional layer of leaves plus a few pieces of bark or rotted wood will serve as objects under which the animals may hide or sleep. A shallow container of water should always be available to these forms. The use of fine sand is not too advisable since lizards, as well as snakes, may accidentally get some in their mouth and it often causes considerable irritation. A variety of small, live insects will provide satisfactory food. Lizards, as well as turtles and snakes, should be kept in places where they may receive occasional sunlight.

Snakes may often be kept quite successfully for long periods of time in relatively small cages, although it is advisable to have the cage large enough to allow the snake to stretch out and move about. Aquaria of different sizes are probably the most satisfactory and attractive containers in which to house snakes, although cages with wooden frames and one or more glass walls are also quite satisfactory. In the case of all reptiles, some types of screen (preferably hardware cloth) should be used to cover the top or door of the cage to allow ventilation and to prevent escape. The cage should not be made entirely of wire screen, however, since snakes may rub their noses raw on it and produce abrasions that might result in fatal infections. A plain wooden floor is probably best; it can be easily cleaned and provides proper traction for crawling and capturing or eating food. Cage joints should be tight and all doors should fit snugly since snakes are adept at escaping through very small openings.

Snakes should be supplied with some type of dish containing water, although it is best in most cases not to have a container large enough to allow the snake to enter and lay completely submerged. Although a rock, piece of bark or branch may be put in the cage as aid to the snake when shedding its skin (providing a rough surface on which to rub) or as a structure on which to rest or climb, such objects are usually unnecessary. Some species, such as the small burrowing snakes, may do better if provided with soil or leaf litter in which to burrow and hide.

Most snakes are quite nervous when first captured and caged, but in due time the majority of species will become docile and easy to handle if not teased or aggravated. This, of course, does not apply to the poisonous snakes, and at no time should anyone keep-

ing venomous species in captivity trust their docile appearance and actions. Although some snakes will readily accept dead food after they have become accustomed to feeding in captivity, most prefer living food. When food is offered (see food habits for each species), the snake should be left alone until the prey is swallowed, and even several hours to a day afterwards.

Snakes will feed more readily in captivity on foods normally utilized under natural habitat conditions. Although some individuals can go several months without eating, it is best to provide food at least every two weeks if possible. Some species are rather highly specialized in their preference for a particular food; for example, the Common Hog-nosed Snake feeds almost exclusively on toads. When attempting to feed captive snakes, it is advantageous to know their normal food preferences. Certain snakes may refuse to eat in captivity, and when this happens it becomes necessary to force-feed the individuals. This may be done by gently forcing pieces of moistened meat down into the throat with a pair of blunt forceps; a mixture of raw egg, thinned with milk and fortified with cod-liver oil may be force-fed to a snake by means of a simple small battery syringe. Care must be exercised in handling a snake during such a procedure since their mouth may be easily damaged.

If a captive snake is well fed and watered and is kept in a clean, dry cage at normal room temperature (72°), there is little chance that the individual will become diseased. However, poor health, lack of proper food or an injury may bring on a disease common to captive snakes known as Mouth-rot or Canker Mouth. The snake's gums swell and pus is produced; the snake soon dies if the infection invades the tissues and bones of the mouth. The disease may sometimes be cured by gently removing (with a cotton swab) all dead tissue, pus and loose teeth and by spraying or swabbing the infected areas once or twice a day with a mild anti-septic such as metaphen. Water snakes are often parasitized with leeches; these can easily be removed, as can ticks, with a pair of forceps. Occasionally snakes become infested with mites or chiggers, but by sprinkling ordinary flea powder over the cage floor, or applying a soap paste to the infested areas, they may be killed or driven away.

CHECK LIST AND CLASSIFICATION OF ILLINOIS REPTILES

Phylum Chordata

Class: Reptilia

Order: Testudines (Turtles)

Family: Chelydridae

Chelydra serpentina Common Snapping Turtle

Macrochelys temmincki Alligator Snapping Turtle

Family: Kinosternidae

Sternotherus odoratus Common Musk Turtle

Kinosternon flavescens Yellow Mud Turtle

Kinosternon subrubrum Common Mud Turtle

Family: Emydidae

Clemmys guttata Spotted Turtle

Emys blandingi Blanding's Turtle, Semibox Turtle

Terrapene carolina Common Box Turtle, Box Turtle

Terrapene ornata Ornate Box Turtle

Graptemys geographica Common Map Turtle,
Geographic Turtle

Graptemys pseudogeographica False Map Turtle

Chrysemys picta Painted Turtle

Pseudemys floridana Southern Terrapin

Pseudemys scripta Pond Terrapin

Family: Trionychidae

Trionyx ferox Soft-shelled Turtle

Trionyx muticus Spineless Soft-shelled Turtle

Order: Sauria (Lizards)

Family: Iguanidae

Sceloporus undulatus Fence Lizard

Family: Anguidae

Ophisaurus attenuatus Slender Glass Snake

Family: Teiidae

Cnemidophorus sexlineatus Six-lined Race Runner,
Eastern Race Runner

Family: Scincidae

Lygosoma laterale Little Brown Skink

Eumeces fasciatus Five-lined Skink

Eumeces laticeps Greater Five-lined Skink

Order: Serpentes (Snakes)

Family: Colubridae

Natrix grahami Graham's Water Snake

Natrix septemvittata Queen Snake

Natrix cyclopion Green Water Snake

Natrix erythrogaster Plain-bellied Water Snake

Natrix kirtlandi Kirtland's Water Snake

Natrix rhombifera Diamond-backed Water Snake

Natrix sipedon Common Water Snake

Storeria dekayi DeKay's Snake

Storeria occipitomaculata Red-bellied Snake

Thamnophis radix Great Plains Garter Snake

Thamnophis sauritus Ribbon Snake

Thamnophis sirtalis Common Garter Snake

Tropidoclonion lineatum Lined Snake
Haldea valeriae Valery's Ground Snake
Heterodon platyrhinos Hog-nosed Snake
Heterodon nasicus Western Hog-nosed Snake
Diadophis punctatus Ring-necked Snake
Carphophis amoenus Worm Snake
Farancia abacura Mud Snake, Horn Snake
Coluber constrictor Racer
Masticophis flagellum Whip Snake, Coachwhip
Opheodrys aestivus Rough Green Snake
Opheodrys vernalis Smooth Green Snake
Elaphe guttata Rat Snake
Elaphe vulpina Fox Snake, Spotted Adder
Elaphe obsoleta Pilot Black Snake
Pituophis catenifer Bull Snake, Gopher Snake
Lampropeltis calligaster Yellow-bellied King Snake
Lampropeltis getulus King Snake, Speckled King Snake
Lampropeltis doliata Milk Snake
Cemophora coccinea Scarlet Snake
Tantilla gracilis Slender Flat-headed Snake

Family: Crotalidae

Ancistrodon contortrix Copperhead
Ancistrodon piscivorus Water Moccasin, Cottonmouth
Sistrurus catenatus Massasauga
Crotalus horridus Timber Rattlesnake

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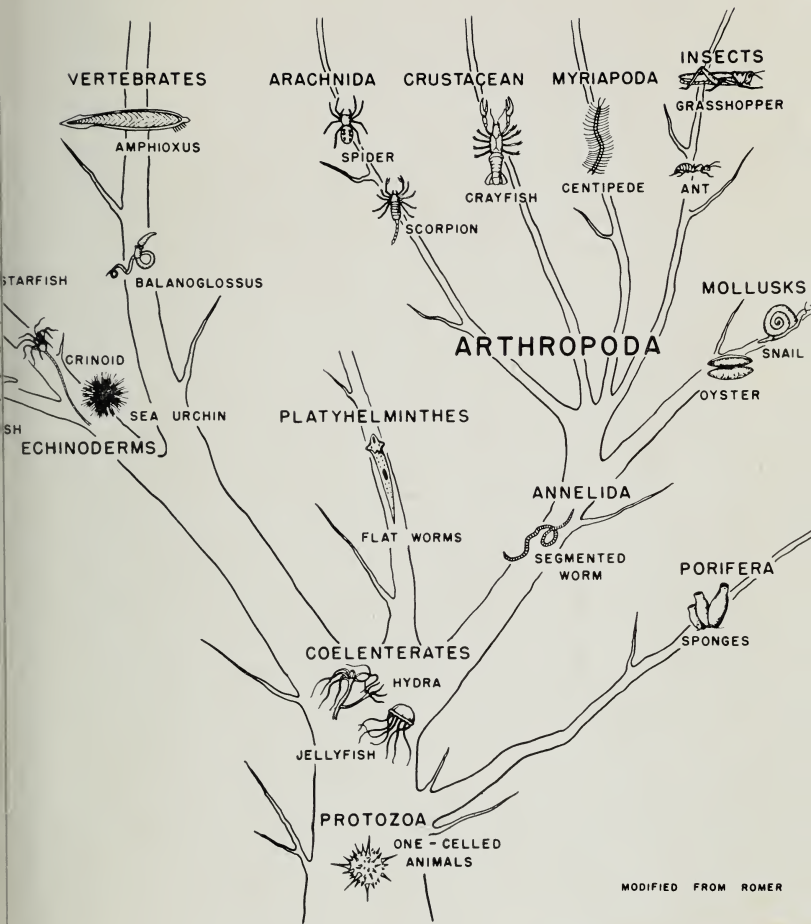
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